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Achieving "Built-In" Safety

Paper Mill Safety Director Explains the Application of Psychological Principles to Prevention of Accidents

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SAFETY is a mental habit and unless it functions automatically, almost unconsciously, as do our involuntary muscles, it will be only superficial and bring disaster in an emergency. Attention to the development of this mental state will yield greater dividends than any other aspect of the work. Neglect of psychological considerations will spell failure to the whole.

Executives of paper mills and heads of safety departments will find many valuable suggestions in the accompanying article by Safety Director Brennan which has been prepared for exclusive publication in THE PAPER INDUSTRY. He suggests means for the practical application of psychological principles to safety work in paper mills and does it in absorbingly interesting fashion.

The most successful safety engineer will always be a psychologist, the scope of safety involving nothing more than a way of dealing with human thoughts and actions. This defines the science as well. Playing upon the motions by use of departmental records, photographs, contests, ridicule and the like is the practical application of psychology. To illustrate, a sign was placed on a bulletin board reading—

"There's a Slacker Here—Too Tired to Wear Goggles —Good-bye, 730 No-Accident Days!"

In an hour three men appeared at the Safety Department to confess, one indignantly, one apologetically and one shame-facedly.

To discourse upon methods of guarding methods against accidents, statistics and their value, first-aid problems, the place of the foreman and the need for co-operation would be but useless iteration. Safety handbooks and literature present the subject far better than it could be treated here. This sameness and monotony of subject often does much to discourage attendance at conventions and sectional meetings. We should bring back from these meetings new and novel ideas concerning accident prevention, rather than memories of excellent cuisine and a review of our bookshelf. With this in mind, I warn you I have never even dozed away the hours in a psychology classroom. Indeed, I am barely sure of the spelling of the word, and yet plunge boldly into the subject.

Safety by Induction

Safety cannot be rammed down the throats of men, neither can it be "built-in" with threats and penalties. More flies can be caught with molasses than with vinegar. In the same way greater progress is made when pressure is held well in the background. True, pressure and penalties are essential but to seize upon them to solve only slightly difficult problems is to weaken the morale of the men. Like the horse that can be led to the water but cannot be made to drink, men can only sweat and suffer for a cause when from observation and the use of reason they can see its benefits.

To attain this much-to-be-desired state of mind, several things are of prime importance. First, the men must be absolutely convinced that the management is advocating the safety program in all its ramifications for no other than humanitarian and efficiency considerations. This is particularly true of mills about to start a safety movement and is the first essential to be achieved. Personal gain is the motive imputed invariably by the suspicious element. There are those in your organization who may have grievances, real or imaginary, as well as mortals who were just born to be "oppositionists". Unfor-

tunately both classes of men seem always to be possessed of a desire to expound at every opportunity.

Your weapons are several. A positive statement of purpose and intent emanating from the highest authority in the mill may be made to a carefully selected group of employees, this group to be carefully selected for their conservative make-up, their influence among their fellows and their standing in the labor organizations. The selecting of several typical cases, among them that of the fifty-dollar-a-week man who had to be content with a small compensation fee and experience agonies at a decidely reduced income. The figures should be spread out on full-size sheets of wallboard, using plenty of red. Add a signed statement from a popular employee to the effect that "It not Only Costs but it Hurts to get Hurt!" Present a carefully selected picture of an adorable child under the caption "Dad's accident kept me from college and took our automobile away from us."

Last but not least, abstain from publishing information concerning any saving to the firm that may follow the men's efforts for Safety. Don't put a weapon in the hands of malcontents! Rather use a $10,000 outlay for an escape from chip loft and digester head, emblazoning the sum on a poster together with some such appeal as "Gladly spent for Your Safety—Appreciate, Co-operate, Suggest". This is another story.

Sincerity Must be Evidenced

Another essential factor in the attainment of our psychological ideal is the creation of a sentiment or rather conviction among the men that the executives want safety, believe in it and practice what they preach. Let those in authority heed this warning! You can do no greater harm to your Safety Engineer's work than to pass a bulletin board without a glance, step over a board having nails in it without turning them down or go about the plant with an undressed wound. A bandage on the president's finger attracts more attention than would Lindy. This Safety business is a "follow the leader" proposition. Many a time have I seen the general manager walk through the shops, every man busily engaged and apparently seeing nothing but the job before him. But never have I found the man who was too busy to see the manager wrestle a casting out of a passageway to the ruination of a shirt. Every time he borrows a hammer to restore a dilapidated guard to usefulness a great victory has been won for plant safety. In ten minutes the news reaches the most farflung portion of your mill. A pat on the back from the "big boss" buys more safety than a ten-dollar bill.

Take advantage of human nature to attain good will. If you greet a man each morning with "How's tricks, Shorty", or "How's the sick baby, Joe", you will build foundations that will carry the load through thick and thin. Avoid the "detective" impression as poison to your hopes, for in the same measure as you detest spying, so do the men. Gain confidence, even at the momentary loss of safety efficiency. It is from confidence in you that there comes to your ears news of all those secret practices which are often so ultrahazardous. Swap a word of fishing comment with the fishermen, baseball with the ballplayers and thus use hobbies to pry those confidences out of friendly bosoms. Again, the Safety man who will not follow the suggestion-maker down under the blow-pits, over the roofs and back of the machines, taking the drippings and cannot hope to create an impression of sincerity. He who comes back to his office begrimed and filthy after attending to some safety job under bad conditions pays indisputable testimony to his own sincerity and the men who will likely say among themselves something to the effect that "that bird really believes this stuff he hands out to us!"

Some Ineffectual Methods

The practice of heaping reports of infractions of Safety rules upon the foreman is decidedly injurious in that he wearies of the subject, and sometimes carries a rebuke to extremes in passing it on to someone under him. The sting of a sharp tongue is held against the Safety work, suggestions do not materialize, new men are given the wrong impression and a countercurrent is set up to make things go wrong. Hunt an hour for a man to find him alone. Caution and scold in private. Hunt two hours to find a man among others in order to praise. Appear to be the man's friend; not the Company scout.

Perhaps the surest way to get into difficulties is to play off one department in a pulp and paper mill against another. No two have the same hazards, the same number of employees, or men of identical mental make-up. A machinist, by nature of his profession a high mental type, will work among gears and cutting tools for years without injury. He will also work longer on the river or with the yard crew than those who are regulars there. Mathematical correction can be had for differences in numbers, no doubt for varying degrees of hazard and exposure, but nothing can be utilized to show a correction for mentality. Furthermore, contests conducted in such a way as to require correction factors are more or less futile, the majority of competitors being neither able nor willing to resort to mathematical gymnastics in order to ascertain their standing. This lack of knowledge on the part of contestants breeds confusion, misunderstanding and listlessness. All three being contagious it would seem better not to entertain them at all.

A Mill Contest Idea

The only fair single mill contest that I can find is the one in which the payroll is divided, odd pay-

card numbers on the "Giants", even-numbered cards on the "Yankees"—or what have you? A carpenter will be competing against his helper. Both will be careful, penalties being fastened on the team whose member caused the accident, not on the man who suffered it. A hemlock plank used for a stage, which breaks and throws No. 300 to the ground costs the opposite team the penalty, provided No. 333 selected the plank and placed it there.

Portable Bulletin Boards—The tools of our trade have their psychological aspects. Bulletin boards with gaudy lacquered borders impress and embellish, as does a fine frame on a picture. The drab interiors of paper mills require the light and play of color. The suiting of such boards to light is folly, there being strategic points where complete effectiveness can only be had. A large piece of wallboard, painted black and divided by a colored line, resting on an easel in the very broad thoroughfares is most effective. Men must walk directly at it, detour and of necessity absorb its message. Concentrations of men and material for emergency work can be served only by these portable boards.

The Plant Camera—No discussion of this sort would be complete without reference to the uses of the plant camera. Observe the Sunday papers being torn apart for the rotogravure section and apply the moral to your safety work. We like to see our picture in print and get a kick from scanning the display case of the professional photographer. Your posting of a picture showing the crew who have worked 1,000 consecutive no-accident days yields both a crop of pride and a flock of determined resolutions. Suppose the core truck is frequently left in a passageway, your admonitions being seemingly of no effect. Recruit a "victim", heaping his arms with material. Shot number one shows the offending truck handle under the feet of the victim. Shot number two shows the man prostrate, material on top. The third picure can either show the stretcher-case on the route to the hospital, or the victim swathed in bandages, emerging from the first-aid room. All three mounted in sequence and displayed without comment, will teach truckers a never-to-be-forgotten lesson. A trip "on the carpet" offers no such terrors as brazen publicity via the camera. Jobs of guarding, done without pressure of suggestions or Safety Department pressure are more efficiently performed when appreciation is shown by pictures. Thus, pride, shame and joy can be made use of.

In conclusion, I would say to the man whose work has reached a point of little progress, "Close up your filing cases, pitch the records and statistics into a corner; forget the "cost per ton" and **Get Out Into the Mill!** Follow the workmen, talk with them, admit inability to cope with the strange malady. You'll find some mighty keen individuals out there among the screens and grinders. Listen, for it costs nothing. You know that every man thinks he could do a better job than you at Safety supervision; why not gather up a few ideas? Have two men delegated to you, both of the "Yankee tinker" type, capable of a passable job of woodworking, tinsmithing, piping or just plain housekeeping. With them at your heels go through the mill. As men come up to report have one of the two jump on the unsafe place and clean it up, right off, quick! As you see other unsafe spots, design appropriate remedies and apply them with the aid of your two proxies. Keep this up until you find your handy man idle part of the day. Then, and not until then, is there time for elaborate bookkeeping in a safety-stagnant mill.

Let us have a practical psychologist at the next national convention to tell us why safety championships can be won by working on men's emotions.

Centrifugal Pumps

By WARREN D. SPENGLER

THE importance of having centrifugal pumps fill the requirements is often due to having lines too small or having some particular operation requiring a higher pressure. The entire amount of water may be pumped at a pressure greater than necessary. Suppose 1000 g.p.m. is pumped 50lb. pressure, when 40lb. should be sufficient. This would cause a loss of about 8½ h. p. continuously worth about $425.00 per year.

A similar loss may be occasioned by operating pumps at different conditions than those for which it was designed. For instance on the above illustration a loss in power by operating a pump at a point where the efficiency would be 12 per cent less would cause about the same loss in power. This condition might occur if a pump designed for 1000 g.p.m. for instance, where operated at ½ load or less. Such losses easily pass unnoticed since there is no visible evidence. In a plant having considerable pumping equipment it may become a serious drawback to good power costs.

Maintenance

Centrifugal pumps maintenance troubles come largely through operation on water containing mud or suspended matter. Under such conditions, shaft sleeves are often a source of trouble, due to the sand working through the packing and causing undue wear on the sleeves. Where a separate clean water supply is available it may be used on the sealing glands and thus decrease wear. Otherwise the only answer to the problem is in using a material that will not wear rapidly. Ordinarily, bronze is used in making these sleeves. In some cases, sleeves plated with chromium have given considerably longer life; in others, stainless steel has been used to advantage. In one case stainless steel gave a life four times that of bronze. Where maintenance is high it is well to try some such material.

Another source of difficulty occasionally encountered is in check valves on centrifugal pumps. A hinged check valve will have sufficient movement to cause wear on pins and bushings, often times enough that the valve does not close.

Installation

Bad suction conditions are often a source of loss on pump operation. A centrifugal pump on high suction lift is placed at a disadantage both as to capacity and efficiency. Oftentimes high suction lift conditions are found where the pump is not set high above the water due to the layout of suction piping. Horizontal runs of suction pipe and bends should be avoided as far as possible. Bends close to the pump are particularly bad since they may often cause uneven distribution of water to the two sides of a double suction pump. This may result in end thrust or in some extreme cases in breakage of pump shafts. A straight run of pipe at the pump inlet is always desirable even if only one pipe diameter in length.

Advantages of Sodium Bisulphite Over Calcium Bisulphite in Cooking Liquors

An Interesting Study of Developments in the Sulphite Cooking Process Down to the Present Time

ATTENTION is called in an article by L. J. Dorenfeldt, contributed to a special number of the **Papierfabrikant**, of Berlin, to the early work undertaken by himself and Dr. Viggo Drewsen looking to improvements in the cooking of wood by the bisulphite liquor process.

Some thirty-five or forty years ago, Doctor Drewsen developed a sodium bisulphite process by adding a solution of salt cake to the usual calcium bisulphite liquor. Salt cake is sodium sulphate and this reacted with the calcium bisulphite to form sodium bisulphite and calcium sulphate or gypsum which was centrifuged out and washed. The reaction was not a complete one, the resulting liquor containing two-thirds of sodium bisulphite and one-third of calcium bisulphite, and this was used for cooking in the regular way to yield a fiber that was more hydrated and easier bleached than that of the usual calcium bisulphite liquor. A saving of at least 50 per cent of chloride of lime was effected in the bleaching process, but owing to the difficulty of finding an outlet for the gypsum (pearl hardening) this became a burdensome waste product. This, together with rising costs of salt cake and lower cost of chloride of lime, led to the abandonment of the process, further influenced by the circumstance that no higher prices could be obtained for the improved pulp.

Mr. Dorenfeldt developed the process and won a first prize of 10,000 marks offered in a competition in which eighty-three others took part. An attempt was made to apply the process commercially, but difficulties connected with the recovery of chemicals made this impossible.

Conditions have since become more favorable for the evaporation and combustion of calcium bisulphite liquor than they were in the early days and this is brought out in a review of developments in waste liquor utilization by Mr. Dorenfeldt, particularly with regard to the replacement of calcium by sodium sulphite liquor. The article casts light on the subject of waste liquor utilization from many points of view and may stimulate further research and impel the pulp industry to new advances and improvements that will ultimately solve the problem.

It is remarked by Dr. v. Possanner that in technical matters every advance must await its time but that fundamental ideas can never change, which appears to be particularly true of the work of Dr. Viggo Drewsen, who in 1891 was the first to conceive the idea of adding a sodium base to the sulphite liquor used for cooking wood. That the waste liquor processes of Drewsen and Dorenfeldt have not yet proved practicable cannot be gainsaid, but that they have not come to grief or proved fruitless is attested in the following review of developments abstracted from the paper by Mr. Dorenfeldt, and adapted for publication in THE PAPER INDUSTRY.

Advantages of Sodium Bisulphite Process

By L. J. DORENFELDT

Since 1901 the calcium bisulphite process is increasingly able to compete and it therefore becomes necessary to turn to an exact and conscientious examination of the advantages and possible disadvantages of the sodium bisulphite process, based on both scientific and practical experimentation.

For experimental work a diagram of all branches of production should be drawn up, from liquor preparation to paper and alcohol and to any other utilization of the components of the waste liquor. In what follows I will endeaver to enumerate the significant interrelated factors.

In the first place comparable cooking experiments must be run under conditions that do not differ too

much from mill practice. For this work the equipment of the Forest Products Laboratory, Madison, Wisconsin, which I studied in 1920 appears well suited.

Taking the competing liquors of the same make-up on a percentage basis, the conditions should be ascertained under which the liquors give the highest yield, the best fiber, and the best paper, with the least bleach consumption. It should be noted particularly if the sodium sulphite liquor does not possess a greater and more rapid wood penetration value. Experiments should also be conducted with pure sodium bisulphite and also with sodium-calcium bisulphite, according to Dr. Drewsen's process. Further experiments would cover the variation of moisture content in the wood and the liquor concentrations, and carried on, in the case of the sodium bisulphite, to higher liquor concentrations, to, for instance, 2 per cent combined SO_2. As is known, much over 1.2 per cent combined in the case of calcium bisulphite is not advisable. If the impregnation and cooking experiments should show that with sodium bisulphite, at high concentrations, freshly cut wood or wood fresh from the pond can be cooked as easily as dry stored wood is with calcium bisulphite, then cooking with sodium bisulphite should receive a significant impetus.

Cooking with Indirect Heat

An advantage available a priori with sodium bisulphite is the ability to cook with indirect heat, using a heater like the Morterud system. This has failed hitherto with calcium bisulphite liquor owing to the incrustation of the heating surfaces.

It is well established that indirect heating with a forced liquor circulation offers great advantages as regards yield and uniformity of pulp. By using sodium bisulphite concentrations higher than ordinarily used, I believe a considerable reduction in temperature would be possible even with indirect heaters, which should lead to an increased yield, with an increase of alpha cellulose.

A lowering of the cooking temperature would also be desirable, especially in working at higher concentrations, inasmuch as it may be assumed that the digester and acidproof lining would receive less severe treatment. Care should in any case be exercised with the cementing material of the lining, as it is not impossible that with sodium bisulphite it would be attacked more readily than when calcium bisulphite was used. Very likely gypsum and monosulphite precipitations in calcium bisulphite cooking afford a protective layer for the cementing material.

Here experience is lacking inasmuch as in Böhnsdalen the work was done in the old lead-lined Flodquist digesters. And if I do not err greatly, in Northfleet, Eckman did his magnesium bisulphite cooks in lead-lined digesters. Parallel cooking experiments with various cooking liquors at different concentrations and temperatures would have to be continued for a lengthy period.

In impregnation researches it should be investigated if in the sodium bisulphate process the impregnation could not be effected with monosulphite, but at a higher concentration and with a circulating pump. A liquor low in combined SO_2 and rich in free SO_2 could be filled in later. The effect of impregnation on the cooking process has not, in my opinion, been sufficiently studied, despite the recent publications by Schwalbe.

The cooking experiments should encompass the reuse of various quantities of waste liquor with correspondingly higher fresh liquor concentrations. The advantages to be gained here should be greater in the case of sodium bisulphite than with calcium bisulphite, for a greater concentration of the raw liquor is possible, and because the salts in all stages of combination remain soluble. The more waste liquor that can be reused the greater will be the savings in steam for cooking and for evaporation.

Waste Liquor Recovery

Striking results have been accomplished through the present keen competition in the sphere of heat economy; most European mills have been confronted with the problem of gaining more waste liquor for alcohol recovery and evaporation. Under present conditions not more than 55 per cent of the waste liquor available in the digester is recovered. This 50 per cent to 55 per cent is forced out of the digester and then replaced with water before running out the pulp, partly to enable the pulp to be dumped and partly to condense the steam. The 45 to 50 per cent of residual waste liquor thus diluted is washed out in pits for the most part poorly devised for this purpose. This part of the liquor can no longer be handled profitably. In the U. S. A. and in Canada, however, where, as has always been the case in soda mills, the entire contents of the digester are blown under steam pressure into blow pits with perforated bottoms, about 90 per cent of the total waste liquor is recovered in this way.

If it is profitable to use the sulphite waste liquor for alcohol recovery or for the recovery of waste heat, then it is clear that the profits will be much greater with 90 per cent than with 50 to 55 per cent; for the installation and operating costs arising from the doubling of the waste liquor volume would be only slightly increased or certainly not in the ratio of 50-55 : 90.

Here is where I believe sodium bisulphite has the advantage at the outset. To rebuild all the sulphite digesters in Europe would cost altogether too much time and money. Hence the discharging must, in general, be done as heretofore. Only I would replace with waste liquor the water required for displacing the liquor. In the operation, the calcium bisulphate liquor would precipitate much more resin

on the pulp than would sodium bisulphite, with which there could be no monosulphite precipitation either. With sodium bisulphite there would, moreover, be the possibilty that the soda required for neutralizing the liquor could be added in the first 10 to 20 per cent of the diffusion wash water and thus deresinify the pulp. This would be impossible with calcium bisulphite owing to the precipitation of monosulphite.

I am counting on the extreme likelihood that the complete emptying of the sulphite digester using sodium bisulphite, by means of a return of the waste liquor, would be easy to effect without rebuilding.

On the other hand I do not know, in fact, doubt very much, if the pulp run out under cold pressure could be washed as readily and as completely and with as little water as when it is blown by the American method. Pulp blown in the American way is thoroughly disintegrated and has, therefore, the full benefit of the filtering effect of pulp. By cold dumping, the pulp is not disintegrated but falls into the pit while retaining its chip structure. Diffusion effects within the cooked chip would not be nearly so good and the wash water would have a tendency to channel without displacing the liquor within the chips. In any case, a larger quantity of water would be needed, resulting in the dilution of the waste liquor.

It would be very necessary to find comparable values for this, heeding, at the same time, the danger of resin precipitation on the insufficiently deliquored fibers as they receive further treatment in disintegrators, sand traps, deknotters and dewatering machines. If my assumptions prove to be correct, relief must be sought even at the expense of waste liquor utilization. For this there are various methods, but all are surely better accomplished with sodium than with calcium bisulphite. In this connection it would also be interesting and quite important if one could determine with certainty if the fiber is affected by being blown under pressure. That this is the case has been stated, and not entirely without reason, in a process whereby every fiber, under a steam pressure of five to ten pounds is suddenly discharged into a vessel at atmospheric pressure. Such a comparison could be made in a soda or sulphate mill. The breaking lengths of both unbleached and bleached pulps would need to be determined; for even if the unbleached blown pulp should show a shortened breaking length, it is quite conceivable that with the more thoroughly washed disintegrated pulp improved bleaching qualities would more than offset this loss.

In the pulp washing, experiments should be conducted with varying heights of pulp in order to arrive at the most suitable construction for the pit. It is of primary importance never to exceed the limit of the natural filtering ability of the pulp. Below this limit the waste liquor is displaced by water without being itself diluted. Above this limit the water will channel with consequent dilution of the liquor and insufficiently washed pulp.

Treatment of the Waste Liquor

After cooking the pulp and removing the waste liquor, the liquor should be treated further, for recovery of alcohol, heat utilization, and, in the case of sodium bisulphite, for the recovery of the soda and perhaps the sulphur.

The waste liquor from the cooks needed in the above comparative experiments must therefore be investigated for fermentable sugars. If it is found more advantageous to cook at a lower temperature, then an increase in the present alcohol yield is also to be expected.

In these comparative cooks it would also be interesting to determine if, with indirect heating, the increase in fermentable sugars would not more than offset the loss of such sugars when they are destroyed in the liquor used for recooking. *

The yield of alcohol per cubic meter of such a liquor should be more than compensated for by the saving in apparatus and heat that would correspond to the smaller volume of liquor for fermentation and evaporation. If my assumptions are shown to be correct on this point, then the apparatus designed for the recovery of alcohol from 50 to 55 per cent of the liquor would suffice for the treatment of all the liquor on the pulp. That would again be an advantage in favor of the sodium bisulphite process. The evaporators to be erected would also be correspondingly smaller.

On the other hand I do not know how sodium bisulphite waste liquor will behave in the alcohol recovery. In contradistinction to calcium bisulphite, sodium bisulphite waste liquor precipitates no base as monosulphite on aeration and neutralization. Whatever is in the cooking liquor remains. The soda added for neutralizing becomes sodium monosulphite. This cannot be without its influence on the fermentation and should be determined.

The increased salt content caused by the neutralization of the free SO_2 would also affect unfavorably the energy required for evaporation, since the boiling point would rise and the temperature differential at the evaporator surfaces would be diminished. It is also reasonable to suppose that the calorific value of the combustion of the organic matter would be diminished by the increased salt content; first, because per unit weight of organic matter there is a greater water as well as salt content; secondly, because the reduction of increased quantities to carbonate and sulphite would consume heat. On the

* Drewsen declared in 1893 that any addition of waste liquor to the cooking liquor was deleterious to the cooking process, and was even more certain of this than Häggiund in one of his most recent publications. My attempt, by reuse, to diminish the volume of waste liquor has indirectly been suitably accomplished by the recent work on denser digester filling by Fresk, Swenson, et al.

other hand, in the absence of calcium salts a more complete combustion of the organic carbon should be attained. Also as regards the incrustation of the evaporator tubes sodium bisulphite would be more advantageous than calcium bisulphite waste liquor, especially where there is evaporation without alcohol recovery.

Even if it should be revealed that the sodium bisulphite process makes alcohol recovery questionable, it would not therefore follow that an all too vital loss would ensue. If all the liquor is to be burned, great quantities of heat are needed to reheat the liquor for evaporation after the cooling essential to fermentation. And even if a heat exchange is effected, there is the cost of the apparatus and all of the heat is not recovered anyway. Besides, the quantity of heat units lost by the fermentation should not be underestimated.

And then, too, all the liquor in the world would not be worked for alcohol. The comparison between calcium bisulphite and sodium bisulphite should therefore be made without regard to alcohol recovery.

Evaporation experiments should be made with sodium bisulphite waste liquor at various concentrations and at various temperatures to ascertain how high in temperature one can go before aldehydes are split off and the precipitation of what I call humus material becomes too troublesome. Such a precipitate would hinder evaporation. On the other hand, the higher in temperature one could go without trouble, the better the heat economy.

There are, in Scandinavia and more in the United States and in Canada, a number of plants where sulphite and soda or sulphate mills are operated together. In such cases, the soda salts recovered from the sulphite waste liquor would be used to make up the soda losses of the sulphate mill as I had already proposed in my Wolfach prize essay. Where, however, the possibility of such a combination is lacking, the introduction of the sodium bisulphite process would depend, in most cases, on the complete recovery of the soda as pure carbonate. In referring to the D. R. P. 129,227 (Dorenfeldt) on which Doctor Drewsen and I conducted a series of experiments in Wolfach, I call attention to the necessity of repeating these experiments. Even though high percentage CO_2 appeared to drive out sulphide sulphur quantitatively, yet our experiments at that time were not so supported so completely by analyses of the bicarbonates that I am able to say whether traces of sulphur were not retained as Na_2S or as thiosulphate. Means would have to be found to oxidize this sulphur if present to sulphate.

It should be borne in mind that Glauber's salt is becoming rarer and dearer with the development of the electrolytic process of decomposing sodium chloride. So it may be assumed that large quantities of soda rich in sulphur compounds recovered from sodium bisulphite waste liquor would find an outlet in sales to glass factories. But the ideal solution must be sought in an easy regeneration of the recovered soda as pure bicarbonate, with a small proportion of sulphate.

There are still a large number of mills not producing their own chlorine and soda that could buy soda more cheaply as normal or acid sulphate than as carbonate or caustic. For such mills, and especially if they are connected with a sulphate mill, the original Drewsen process would be of particular interest. According to the way he prepared his cooking liquor it was, as is every calcium bisulphite liquor, a nearly saturated solution of gypsum. But a saturated solution of gypsum is not particularly advantageous in the evaporation of the waste owing to the incrustation of the heating surfaces. It should therefore be investigated by digesting a highly saturated calcium monosulphite solution with a saturated solution of sodium sulphate, if liquor comparatively low in gypsum could not be obtained; a liquor so low in gypsum that it would first reach saturation during the evaporation at a point where the viscosity of the thick waste liquor would perhaps hinder it from being deposited on the evaporator tubes.

In addition, experiments should be conducted with the sodium bisulphite process in evaporation and combustion without previous neutralization. There would, indeed, be a greater sulphur loss represented by SO_2 or SO_3 in burning, but there would also be a lessened salt concentration, which is an advantage both in evaporating and in burning. **

American and Canadian Mills Present Advantages

For conditions in the United States, sodium bisulphite would have the advantage that it would encourage the adoption of indirect heaters for the present digesters. Heating coils cannot be built in, for they would render blowing much more difficult; with indirect heaters on calcium bisulphite, sulphation has as yet not been overcome. There is no doubt that with indirect cooking better yields and fiber would result and at a much lower temperature. If this could be done, with the presumably more rapid penetration of sodium monosulphite, without lengthening the time of the digester cycle unduly, then I maintain the advantages to be gained by using sodium bisulphite in American and Canadian mills to be so significant that they ought to be evident to everyone.

In Europe, as has already been said, the chief difficulty with the sodium bisulphite process lies in the cold dumping of the digester. Even if the digesters could be fitted up for blowing, by removing the brick-

** Professor Badger, of the University of Illinois has proposed the same thing in his very commendable work of 1927 on evaporation. With the SO_2 resistant steels available today the apparatus question need no longer stand in the way.

work under the bottom of the digester and attaching a blow-off valve, in most cases it would not be very easy to fit on the necessary blowpits.

There are other reasons why in the United States and in Canada present conditions are more suited for the necessary mill tests, especially where sulphite and soda mills occur together and where the sulphite liquor is still made up in tanks with milk of lime.

Since the best equipped research institute today for experimental cooks is the Forest Products Laboratory, in Madison, Wisconsin, everything points to the United States for research on the practical side. And since the results of the impregnation and cooking experiments are of decisive import for further studies and needs must furnish the material for them, it appears that an arrangement with Madison is almost imperative if an experimental plant will not be available shortly somewhere in Europe.

Above all things today the question of time is paramount. The intensity with which a number of first-class companies are attacking waste liquor evaporation heralds the coming adoption of the sodium bisulphite process; and there is no reason for this except to be first in showing tangible results. Other things also urge the world to move more rapidly. The overcoming of bad smells in the sulphate process and the increasing shortage and advancing cost of wood is inclining American and Canadian manufacturers toward a change from soda to sulphate. From this point to the cooking with sodium bisulphate is not a far step for mills producing sulphite as well as soda pulp.

Cost Accounting in the Paper Industry

Part VII—Standard Prices and Variances

By D. A. WILCOX
Oxford Paper Company, New York

Queries and Answers

In order to encourage discussion on the subject of cost accounting in the paper industry, the author of this series of articles is prepared to answer to the best of his ability any queries on cost accounting that may be directed to him.

THE question of prices at which materials, labor and other items are to be charged into the costs is one that is full of dynamite. Not only does the fixing of prices directly affect the results, but it involves numberless controversial points. Every student of the subject has his own views, each may be positive as to the principles involved, but it is well understood that there is no best way, nor is there only one correct method. Each case must be considered on its merits, with proper appreciation of the underlying principles and attendant circumstances. Any method that gives the information desired in the simplest and most easily understood form should be the best method in the case. What would be "poor accounting" in one case might well be "good accounting" in another, which is only another way of saying that doctors differ.

Definition of Prices

First of all, What is a price? It is the unit figure at which we charge the component elements into the costs. This sounds involved and full of weasel words—why not simply say that it is the unit cost of the material? Well, for one thing, it may not be the cost at all. For reasons which shall be discussed later, we may not want to charge a material into the costs at its actual unit cost. Nor can we restrict items prices to materials. We must have prices for labor, rates per hour, and so forth, and we must price services, such as electricity, hence we are forced at the outset to adopt a very general definition. In the following discussion, it must be remembered that whatever is said about "materials" applies equally to all other items of cost that must be priced.

The Effect of Price

When we use two pounds of material in the product, that fact tells but part of the story. We must adopt some unit price and thus we say that the cost of this material was 2 lb. @ 10c per lb., or 20c. Depending altogether upon the price set for the material, the cost might be 10 cents, 20 cents, or $2,000. Thus the effect of the price is direct and most important.

Whenever the price is changed, costs will change correspondingly. It is the changes in price which tend to upset comparisons in costs as between different periods and thus obscure the effect of operating conditions. Hence the value of using permanently fixed prices as is done in some systems and as was described in the preceding articles of the series.

Actual Prices

In many instances, attempts are made to charge a material into the costs at the actual price paid for it. This may be done by earmarking the particular lots; by charging out all of a lot at its price until the lot is exhausted, then changing the price as a new lot is started (which is known as the "First in—First out Method"), or by using averages which represent the average value of the inventory being drawn upon ("Average of Averages Method"). The idea back of this is that the cost of an article should represent as nearly as possible the actual expenditures incurred to produce it; but this is not true to fact, as the cost

may be quite different and include other factors added for the purpose of assuring both a profit and the continued existence of the business. The word "Cost" should not confuse us nor should we be hidebound by any idea of holding strictly to expenditures. If any other factors, artificial or otherwise, give us particular advantages let them be adopted without hesitation.

Standard Prices

Standard prices are prices set for the purpose of evaluating usages and may be a close approximation of the actual prices or may be very different for certain purposes. Often prices are set for six months or a year in advance on the basis of expected average prices, or, in the case of an unusually high or low actual price, may be set arbitrarily at what is considered normal. They may also be set to represent what the management believes they should be or what the management desires. In such a case, standard prices act as a check on the purchasing department and bring out how well the department is holding to the policies of the management.

Purposes of Standard Prices

1—To permit setting costs without waiting to ascertain what the actual cost will be.

2—To stabilize costs in order that minor price fluctuations may not cause them to fluctuate.

3—To aid in judging the efficiency of purchasing, manufacturing, and so forth.

4—To establish comparisons in operating conditions. By maintaining prices, constant fluctuations in costs will reflect manufacturing conditions alone.

5—To bridge over temporary conditions of extraordinary high or low prices.

Method of Procedure

When a standard price is set, the procedure of handling inventories and issues is as follows:

Goods received are charged into the inventories, building them up, and goods are charged out and into the costs at the fixed standard prices. The debit to inventories may be, and usually is, the actual cost of the goods, including the invoice price, freight and handling charges, but these may be charged to a "Variance Account", this account being then credited and inventories debited with the quantities at the standard prices, the difference, if any, to be charged off at once as a "Purchase Variance". In this case the inventories are always valued at the standard prices. The purpose of this is to determine the purchase variance at once for each invoice as received and to identify the gain or loss due to purchasing by the particular lot, vendor and time. Generally, however, this is not deemed "good accounting" by our general accounting brethren, as goods should be held in inventory at their actual cost or market value until used.

The method of charging off variances upon receipt distorts inventory values and is open to criticism on this score. There appears to be no reason why the same information may not be collected statistically; i. e.; the loss or gain for each invoice calculated and tabulated as goods are received, even though they go into the inventories at their actual costs.

In any event, after the goods have been placed in the inventories, a perpetual inventory record is started and the average actual price of the inventory calculated for each period.

As the goods are issued, the inventories are credited and the costs debited with the quantities issued at the standard prices. This may be more or less than the actual average price of the inventories.

At the end of the period, **the quantities as shown on the stock cards** are priced at the actual average and extended. This, then, is the book value of the inventory and any difference between this and the amount left on the books as a result of the debits and credits should be charged off to profit and loss as a variance.

For example take the following case:

Debits:				
Inventory on hand first of period	1000	items @	10c	$100.00
Purchases	100	items @	10c	10.00
	500	items @	15c	75.00
	250	items @	12c	30.00
Total	1850	@	11.6c	215.00
Credits:				
(Standard price: 12c)				
	100	@	12c	$12.00
	300	@	12c	36.00
	50	@	12c	6.00
	500	@	12c	60.00
	950			112.00
Total debits	1850			215.00
Total credits	950			112.00
	900			$103.00
Inventory end of period	900	@	11.6c	104.40
Variance				1.40
Debit inventory account		$1.40		
Credit variance account			$1.40	

The inventory would thus be debited with $1.40 (to bring it up to its correct value) and the variance account (and hence the profit and loss) credited with a like amount. This credit represents the profit made by purchases having averaged less than the standard price.

Goods in process are handled in exactly the same manner; i. e., inventories are debited with the actual costs and credited at the standard prices.

If when a physical inventory is taken, discrepancies are found between the actual and the book quantities, these should be written off as **inventory adjustments**, adjusting the books to the actual quantities at the actual average price; this adjustment **should not be charged to the variance account.**

This is important because the variances should be built up only of **price differences** and not be confounded **with quantity differences.**

Standards Permit of Prompt Costs

It is true that standards permit of prompt costs where the materials in question are of the nature of "in process" materials. In such a case by using standard prices, the cost may be calculated as soon as the order is completed at any time during the period, without having to wait until the end to find out the actual cost of the material. It also permits of predetermining the costs; i. e., estimating them, and then comparing the actual cost with the predetermined cost on the same basis.

Standards Stabilize Costs

A standard price acts as a reservoir to absorb inequalities in prices and hold back surges. In this way standards tend to stabilize costs. Prices on some items have a tendency to fluctuate from day to day or month to month, while, of course, others are quite stable. It is not desirable to have these fluctuations in prices reflected in the costs and so make costs fluctuate frequently. For one thing it prevents the use of prior costs as a basis of making estimates without a great deal of work in calculating the effects of the prices current at the time. Past records are valueless except after great effort. For another thing a standard price facilitates bookkeeping; averages out peaks and humps in prices and gives us a steady reliable costs figure on which selling prices may be based.

Standard Prices Facilitate Comparisons

By maintaining the prices constant over a long period or indefinitely, it eliminates the effect of price changes on the costs and any changes that do occur must be the result of operating conditions. This has been discussed previously at some length in Part IV and need not be again considered.

Standard Prices to Measure Efficiency of Purchasing Department

If a standard price be set at what is believed to be a fair figure, the variances will reveal at once whether or not the materials are being purchased at this figure. They not only show up this fact itself (which, of course, could be as readily secured by a mere inspection of the invoice prices), but they also show up the amount by which incorrect purchases may be affecting the profits. The variances not only tell **that** the prices are high, but also tell **how much.**

If the variances are debits, showing actual prices to be higher than standards, then the purchasing department may be called upon to explain.

In the case of "in process" stocks such as "bleach in process", and so forth) it tells whether or not the intermediate materials were manufactured at the correct cost and how much was the difference lost or gained to the company for the quantities used during the period.

This is true whether the variances are developed upon receipt of the goods or upon their issue. In the first-mentioned case, the fact is, of course, brought out immediately and the particular lot causing the variance can be identified as to vendor, date of purchase, etc., whereas in the case of issue of goods only the fact is shown that the average price of the goods used during the period was different from the standards. For this reason, where this control is important, it might be well to develop the variances statistically on each invoice, or on invoices which are of most importance. In small organizations where there is a close contact between all branches of the business and where the general manager keeps himself well informed of the doings of the purchasing department such a control would be unnecessary, but in the case of large organizations, where the general manager is unable to keep in close personal contact it might be well to have such information developed automatically for him, for then there would be no possibility that anything could slip by unnoticed. The variances call attention immediately to anything out of line and there is no possibility of its being overlooked.

Bridging Over Temporary Conditions

It sometimes happens on account of a breakdown, the relining of a digester, or some other cause, that there is not sufficient pulp or other material being produced at the mill to fill the requirements, and the necessity arises to go into the open market and purchase pulp at a higher price to keep going. In such a case it is obvious that it would be unfair to penalize the particular orders going through at the time with this high price, and then the use of a standard price, which represented the average at which the pulp would ordinarily be charged, is of great value, for in this case the paper is charged with pulp at the regular price and the difference charged off to the variances; it then represents the extra expense entailed by the emergency.

In such a case the standard price used will differ from the actual price paid for the materials. The same situation might arise where the price was extraordinarily low—below what might be expected to be repeated. In such an event the material would again be charged at the standard price and the variance in this case would represent the extra profit made by the fortunate purchase.

An extreme example was cited in a bulletin of the

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Current Thought by William Sibley

Suggestion System Operation Difficulties—and How to Overcome Them*

ONE of the most common obstacles to suggestion system operation is apathy. In addition, there may be direct opposition on the part of certain foremen or department heads. Too often a foreman will feel that suggestions from the men under him constitute a reflection on his foremanship. Not infrequently foremen carry the utterly fallacious idea that if a man identifies himself by his suggestions, such a man may "get his job."

Still another difficulty lies in department heads who are inclined to be resentful against suggestions having to do with his department which come from men employed elsewhere in the institution. The head of the assembling department, for instance, will put little faith in, and probably much opposition to, a suggestion that may have come from the shipping clerk or a worker in the machine shop. The subconscious reaction of the department head affected is: "What can that man know about **our** work? Let him make suggestions for his own work, but leave us alone."

Then, too, in spite of all that has been said and written regarding "good foremanship", too many foremen have their favorites or "friends" among the men under them, and to whom, in a confidential mood, may air secret antagonism to the system, belittle its value, or deprecate the efforts of the company to lift the level of plant efficiency through suggestions. Being human, the confidante of the foreman broadcasts (with some exaggeration) the foreman's antipathy for the whole scheme. And thus is sown the seed of destruction and poison, which like any seed, grows and expands with life.

Furthermore, in nearly every plant there will be found one or two men who, in all earnestness and sincerity, will make suggestions on anything and everything that comes to their minds or before their eyes. Such "chronic suggestors" can very seriously militate against the success of the whole system if allowed to go uncorrected for anyone so mentally inclined will swing like a pendulum from one extreme to the other. Once they realize only a small fraction of their numerous suggestions are being accepted and rewarded they will become bitter against the whole scheme and openly voice their bitterness to their co-workers. There is a way, as explained in the following paragraphs, to "iron out" this seemingly "necessary evil."

In spite of the fact that the management should never expect that each suggestion box will be filled to the brim at each collection, there is a detrimental psychological effect when the workers at their task see the collector go to a box, unlock it, then receive nothing. An empty box at time of collection can be as disappointing as an empty mail-bag, and may engender the "I told you so" attitude with workers who at best are only luke-warm to the whole idea. How this difficulty may not only be adjusted but capitalized is told in the following paragraphs.

Changing Apathy to Interest

Much has been said and written on the subject of foreman training and the value of so-called "constructive education." Doubtless a great deal of this is sound and much might be accomplished through such means. However, valuable and necessary is the education and winning by argument, it remains that department heads and foremen are human—that just as everyone, they are interested primarily in monetary profit from effort or enterprise. **Due regard to this very human characteristic dictates that every company setting up a suggestion system include in its schedule of awards, special prizes to be given foremen and department heads for the first, second, third and fourth places in number of accepted suggestions during any given period**—monthly, quarterly or annually.

Such financial incentive usually ranges from $10 to $100, and is the simplest, most effective means

(* From Textbook copyrighted by Morton).

for enlisting the active cooperation of otherwise antagonistic foremen. Under such a cash prize plan, it is to the interest and advantage of foremen to see that the workers under them turn in good suggestions. The larger the number of suggestions accepted from any one department, the more chance the head of that department has to win the periodic cash prizes scheduled for foremen and deparment heads.

While these special awards need not necessarily be kept secret, they are not usually printed in the regular schedule of awards submitted to all workers. This is because they have a very limited appeal (only to foremen and department heads) and because their inclusion in the printed schedule complicate the proposition and develop misunderstandings on the part of the men.

The Problem of Inter-departmental Suggestions

When the head of the assembling department becomes resentful against the shipping clerk who may have made a suggestion regarding methods or machinery, management confronts a problem that cannot be overcome by financial incentive. Rather, it is one for tactful persuasion and clear illustration, and the winning over by argument. The disgruntled department head should be taken to task, tactfully, of course, for his resentment against anything that will be of benefit to the company. Isn't this organization just one big family—all working to a common end—that of bigger profits? And after all, who is to say "Thou Shalt Not" when he wishes to make a suggestion that has to do with work outside his own department? Get busy, and make an acceptable suggestion on shipping department work, and incidentally win an award in accordance with its merits.

In general, this is the sort of argument and tactful persuasion that will do most to overcome this too common difficulty. Personalities alter remedies, and in such problems the cure must be prescribed to fit the individual.

Those "Confidential" Foremen

The difficulty set forth in the third paragraph will, for the most part, be overcome through the establishment of bonuses or awards to be paid to department heads or foremen, as outlined under "Apathy to Interest." And after all, this is a problem that has more direct bearing on "good foremanship" for foreman training than on the suggestion system, since with such a foreman, the gossip given in confidence to another worker , would be on some other subject if the suggestion system did not exist. Foremen of this stamp should be made to realize that the mere playing of favorites, the sheer existence of confidantes, as well as the crime of acrimonious gossip is a serious reflection on his ability as a foreman. It is a problem for the executive in control of foreman training rather than the chairman of the suggestion committee. In our opinion, however, this sort of thing will be completely minimized by the payment of awards to foremen and department heads for the ranking place of their respective departments in the number of accepted suggestions.

Chronic Suggestors

This necessary evil would be humorous if he were not so serious. In most every group of men there will be found an individual who will wish to make suggestions on all manner of things, the bulk of which suggestions will be found absolutely worthless. In one company that comes to mind a "chronic" suggestor submitted an average of eleven suggestions a week, not one of which was found to be worthy or constructive.

For such an individual, there is one effective way to stop the flow of worthless suggestions. Call the "chronic" into the office of one of the executives and thank him sincerely for his effort along the lines of suggestions. Express gratitude that he has gotten the idea of the need for suggestions, and regret that thus far none of them has been found acceptable. Then give the "chronic" the task of solving a particular problem, the harder the better. Advise him to make no more suggestions until he has his problem solved, if only in the interest of "intelligent direction of thought and effort." With such a problem facing him, and with such an important problem to the company, the management might readily promise him a check of $50.00 "to start with" if he offers the proper, acceptable solution; while for the suggestor, he feels elated at the congratulation and sincere thanks of the executive and at the assignment of the "hardest job in the plant."

In other instances, merely a quiet talk in the private office of the president will do much to show the chronic suggestor that the management does not want mere numbers of suggestions, but rather workable plans. Quality, not quantity. For some individuals, the statement that "we appreciate very much your effort, but believe you are on the wrong track" will correct the evil, providing, of course, the individual is clearly shown the right track to follow.

The Problem of Empty Boxes

It is always discouraging and not a little detrimental to the health of the entire system to have the collector find the suggestion box empty. For workers to see for themselves that the collector has received nothing from some particular box, quickly engenders the idea that the system is a failure—that interest throughout the plant is waning. This may or may not be the case, since one box may be empty while another to be collected at the same time will be found to contain a dozen worthy suggestions. The second box to be collected, however, is out of sight of the workers who witnessed the futile col-

lection of the first box, and thus is started the idea that the system is on the wane.

Empty boxes are, or should be, the red flag of danger for the management. To find a box empty twice in succession should be sufficient to impel the management to take prompt steps for correction. This correction should be manipulated through the foremen and department heads, tactfully calling them to task for not encouraging suggestions from their men, and admonishing them of their laxity that may cost them their periodic bonus for numerical strength.

A better way to correct this evil, which may recur at infrequent intervals, is to be publicly call the attention of the entire plant to the department that has submitted no suggestions. At one Indianapolis plant this plan was pursued with splendid success. Whenever a box was found to be empty the editor of the company house organ was instructed to write a feature story on suggestions and the system, and give prominence to the departments that were lagging behind the others in the matter of number submitted.

Such an article would feature the fact that at the last collection a certain number of suggestions were received from certain departments but that from "this" and "that" department no suggestions were received. "Is it possible," the article would ask, "that the 'this' or 'that' department was so efficient in operation, maintenance, safety record, or waste elimination, that no suggestions could be made?" Then, after publicly calling attention to the lagging department, the entire plant would be invited to make suggestions as to methods and practices of that particular department. In this way, empty boxes were actually capitalized as a means for stimulating afresh the interest in the entire system.

Satisfying the Dissatisfied

Another common difficulty encountered in the operation of suggestion systems is the suggestor who is dissatisfied with the award given, or over the rejection of his suggestion. This is a very ticklish point and one that is invariably outside the bourne of financial adjustment. A case in point may serve to illustrate one type of dissatisfied suggestor:

At one plant a worker in the machine tool department suggested a change in the quality of steel to be used in a certain tool. His suggestion was that a certain pin be hardened and tempered, that it might give better service, and have longer life. A worthy suggestion which indicated constructive thinking on the part of the employee. A chief engineer readily appreciated, however, that to harden the pin as suggested would embrittle the steel as to make the tool incapable of strain of operation. Realizing the impracticability of the suggestion, the management wrote the worker a letter of rejection, setting forth the reasons in detail, thanking him for his effort and asking him to submit other ideas.

Learning of the worker's discontent with the rejection the management faced the problem of satisfying the dissatisfied. To either reconsider the suggestion or make an arbitrary award was obviously impossible. To attempt a metallurgical explanation of the reasons would be futile since it had already been proved that the worker could not grasp the significance of the details. The problem was solved in the following manner:

A member of the Suggestion Committee was appointed to re-open the matter in a more or less casual manner, securing, if possible, a verbal statement from the employee of his idea, and to point out to him the possibility that perhaps, after all, there had been a misconception on the part of the committee of his exact wishes. By re-opening the question in this manner, it was easily made possible for the suggestion to be given an actual trial, the committee absolutely refraining from exposing any preconceived knowledge of the outcome. The employee was authorized to conduct the test and was requested to report his findings within a reasonable length of time. The report from this workman was as enthusiastic and as prompt as would have been true had he proven his suggestion to be of a meritorious nature. The test and its result was described in the following language:

"I hardened the tool in question, and the steel pin was put to work in a highly tempered condition—all in accordance with my suggestion. This case-hardened pin operated successfully for three operations, but under the strain of the fourth, splintered and shattered beyond repair. This service contrasts itself to the ordinary service received from the old type pins now in use which average about 60 operations each. I thank the committee for proving me wrong."

Thus was the worker completely satisfied with the rejection of his suggestion. As a witness of the failure of his idea he had no grounds for resentment or dissatisfaction. Today he is one of the most loyal supporters of the Suggestion System and has on various occasions merited awards for acceptable suggestions—all of which would have been lost to the company had they not gone to the expense and effort of satisfying the dissatisfied.

Suggestions, however, trivial in effect, always represent constructive thought on the part of the worker. Regardless of the importance of the idea, the mere submission of a suggestion indicates that the worker has been thinking in terms of management. Because of this, it is most essential that rejections be not only accompanied by full and detailed explanations and sound reasoning, but that they be followed up personally by some member of the suggestion committee or department head in an effort to

learn whether or not the rejection is entirely satisfactory.

It is far cheaper to award a suggestion the minimum of $3 or $5, even when the idea scarcely merits such an award, than to incur the dissatisfaction or enmity of an employee.

Small Awards

Now and again a suggestor will be found who believes that his idea was worth more than the amount of his award. Such employees perhaps do not reduce their feelings to a concrete analysis, but in simplest terms, reaction of this kind is merely the conviction that suggestors are not being treated fairly—that the company is robbing them of the greater part of the value of all ideas.

Here is one of the places where becomes apparent the value of determining rewards by cost system analysis. Unless a suggestion is trivial or very minor in importance, its value to the company is determined by cost records and the suggestor rewarded accordingly. In the matter of minor suggestions it is seldom necessary to convince the suggestor of the justice of the award.

Mr. Herbert H. Wagner, president of the Consolidated Gas, Electric Light and Power Company, Baltimore, scales the awards paid for suggestions in accordance with results obtained through their adoption. The schedule of awards in their system is: "For suggestions that are adopted and are estimated to produce an operating saving of more than $25 per month there will be a prize of $25, while for suggestions producing an operating saving of less than $25 per month there will be a prize of $10". In this way the determination of the amount of the reward is entirely a matter of mathematical calculation, the suggestion committee is relieved of all responsibility of such determination and the suggestor is satisfied since he knows he is receiving a stipulated percentage of the inherent value of his idea.

Maintaining the Worker's Interest

The establishment of any suggestion system and the setting up of possible rewards will, by reason of its novelty, create widespread interest among the workers. This interest and the novelty of the scheme, will doubless result in a large number of suggestions during the first few weeks or months of its operation. In too many suggestion systems of the past, however, this interest and enthusiasm which was inspiring and encouraging at first, has been allowed to fade and die as the system became commonplace and without novelty. This natural tendency is a problem to be overcome by every management as it is a tendency entirely natural and human. To permit the worker's interest to lag or diminish means to permit the death of the entire system.

Overcoming the difficulty is a matter of follow-up publicity. No meritorious suggestion should be put into operation and rewarded without full discussion of the details, amount of award, and congratulations to the suggestor being made public. No opportunity for keeping the suggestion system and its value constantly before the employee should be overlooked by those in charge or the editor of the company paper. Every possible medium for publicity should be enlisted, not only at the time the system is inaugurated but perpetually thereafter. Maintaining the worker's interest in suggestion systems is a matter of administration. If the interest of the employee in the system is visibly lagging, then there is something wrong with the administration—not the workmen, or the system.

Cost Accounting in the Paper Industry

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N. A. C. A. to show the importance of this phase of standard costs. It appeared that a certain manufacturer was enabled to buy from a bankrupt's stock at an extremely low price a couple of years' supply of some important raw material. Armed with this low-priced material he went into the market and made quotations which enabled him to get the greater part of the business at a very low price. This went along nicely until the supply of cheap material was exhausted when he found himself confronted with a depressed market for his product and unable to get any more of the material at a figure which would enable him to manufacture profitably at the prices which he himself had set.

The contention was rightly made that instead of using the low price at which to cost his product and set selling prices he should have used a standard price at about the normal market for the raw material and taken the difference as an extra profit or variance resulting from the lucky buy. Thus it may be seen that the use of standard prices to bridge over a temporary condition may not mean just one that involves a short period of time, but even may, as in the case cited, cover a period of several years.

None of the foregoing instances applies to any material especially purchased for a particular order, for in such a case a special standard price should be set, or the actual price used.

Standard Average Prices

Sometimes the standard price set represents a composite price for a group of materials of approximately the same characteristics which may be used interchangeably, or where the material used may be really a combination of several raw materials. An example of this might be sulphite pulps purchased from the outside where several different vendors were each supplying pulp at slightly different prices, but any or all of which might be used interchangeably in any order. In such an event there would be one standard price for "sulphite pulp", which would

be the average of the standard prices of each individual pulp based on the customary proportions used.

Some mills in making up their instructions for the beater men for furnishing the beaters will specify the exact quantities of certain pulps, especially the more expensive ones, and then leave the beater to be filled with slush soda and broke, or book stock. This means that in each case the beater is to be filled to a certain weight and consistency and whatever is required to fill the beater after the measured ingredients are put in, is added in the form of soda, broke, and so forth. In such an event the soda, or whatever is used, may actually be all soda, or partly soda and partly broke. It is therefore necessary to set a standard price for this balancing ingredient which will represent the average price on the normal proportions of all the things that go to make it up.

In the case of such composite prices the variance will be caused, not only by fluctuations in the prices of the individual materials themselves, but also by differences between the assumed proportions and the actual. It is necessary to analyze this condition and see to what extent the variance was caused by difference in proportions, and how much by differences in prices; for the one would be a variance caused by mill conditions, the other having its origin in the purchasing department.

Standard prices may be used for labor rates and set to represent the rate that should be paid for a certain type of work. Whenever a high-priced man is placed in a low-priced job the fact will then be immediately disclosed by the "price" variance for labor.

Standard prices, to be set and never varied, have been recommended for all items of supplies and repair materials, so that when the cost of supply and repair items is compiled, the cost will reflect through the medium of dollars and cents, the actual physical quantities used; comparisons may be made between periods as to efficiency of use of such items. Thus, what is important in belting, for example, is the number of feet of belting used in a year rather than the value of the belting. Though a foreman may be doing very well in reducing the actual quantity of belting used in his department, still, owing to price advances, the records may show an apparent increase in the use of belting; it is very difficult to make all the necessary allowances in judging the efficiency of the use of a given material in all the departments of a mill.

Standard prices have many uses, and applied with discretion, can be made extremely valuable in aiding the management to secure control of the expenses and efficiency of the mill. Standard prices can be used with equal facility whether the cost system is an "actual cost system", a "standard rate system", or a "predetermined cost system".

Stock Loss Determinations

By D. S. DAVIS

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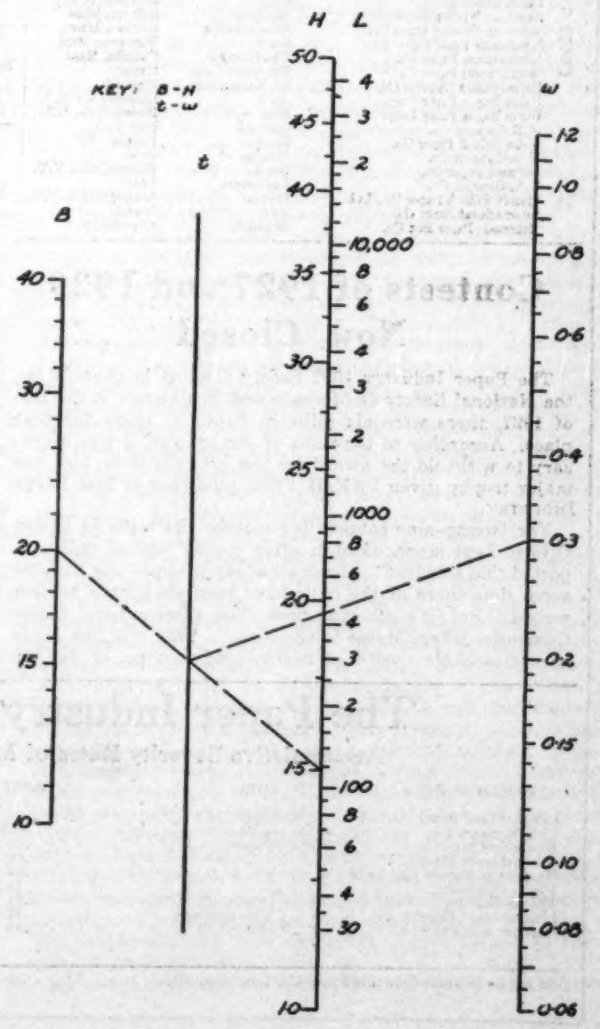
THE accompanying alignment chart may be used to calculate stock losses from white water weir and consistency measurements. Stock loss, L, in pounds air-dry stock per twenty-four hours is given by the expression,

$$L = 40.0\ w\ B\ H^{3/2}$$

where rectangular uncontracted weirs are used and where

W = White water consistency in grams per liter
B = Width of weir in inches
H = Head on weir in inches

The use of the chart is illustrated as follows: Given the width of the weir as 20" and the head as 1.5" and the consistency as 0.300 grams per liter, find the stock loss per twenty-four day. Following the key, connect 20 on the (B) scale with 1.5 on the (H) scale and from the intersection with the (t) scale draw a line to 0.300 on the (w) scale. This latter line crosses the (L) scale at 440, which is the air-dry weight in pounds of stock per 24 hours.



The Paper Industry 1929 Safety Contest

May Scores

No Accidents in 40 Mills

PERFECT SCORES

	PARTICIPANT	MILL	LOCATION
GROUP A	Kimberly-Clark Corp.	Kimberly	Wisconsin
	International Paper Co.	Hudson River	Palmer, N.Y.
	Kimberly-Clark Corp.	Falls	Niagara Falls, N.Y.
	Northern Paper Mills	Green Bay	Wisconsin
	Champion Coated Paper Co.	No. 2	Hamilton, N.Y.
	Nekoosa-Edwards Paper Co.	Port Edwards	Wisconsin
	Kimberly-Clark Corp.	Niagara	Wisconsin
GROUP B	Nekoosa-Edwards Paper Co.	Nekoosa	Wisconsin
	St. Croix Paper Co.	Woodland	Maine
	International Paper Co.	DeGrasse	Pyrites, N.Y.
	Kimberly-Clark Corp.	Badger-Globe	Neenah, Wis.
	Ontonagon Fibre Co.	Ontonagon	Michigan
	Strathmore Paper Co.	No. 2	Woronoco, Mass.
GROUP C	International Paper Co.	Montague	Turners Falls, Mass.
	Beveridge Paper Co.	Indianapolis	Indiana
	Port Huron Sulphite & Paper Co.	No. 1	Port Huron, Mich.
	Bird & Son, Inc.	Phillipsdale	Rhode Island
	Kimberly-Clark Corp.	Atlas	Appleton, Wis.
	International Paper Co.	Webster	Orono, Maine
	Marinette Menominee Paper Co.	Menominee	Michigan
	Lowe Paper Co.	Ridgefield	New Jersey
	Continental Paper & Bag Corp.	Ashland	New Hampshire
	Gardner & Harvey Co.	No. 3	Middletown, Ohio
	Upson Company	Board	Lockport, N.Y.
	American Writing Paper Co	Mt. Tom	Holyoke, Mass.
	American Writing Paper Co.	Flatner-Porter	Holyoke, Mass.
	Strathmore Paper Co.	No. 1	Woronoco, Mass.
	International Paper Co.	Winnipiseogee	Franklin, Mass.
	International Paper Co.	Livermore Falls	Maine
	United States Gypsum Co.	No. Kansas City	Missouri
	Union Bag & Paper Corp.	No. 5	Hudson Falls, N.Y.
	Union Bag & Paper Corp.	Allen	Hudson Falls, N.Y.
	U. S. Gypsum Co.	Oakfield	New York
	Mead Pulp & Paper Co.	Peerless	Dayton, Ohio
	U. S. Gypsum Co.	Gypsum	Ohio
	Defiance Paper Co.	No. 3	Niagara Falls, N.Y.
	U. S. Gypsum Co.	Lancaster	Ohio
	Lincoln Pulp & Paper Co., Ltd.	Lincoln	Merritton, Ont., Can.
	International Paper Co.	Riley	Maine
	Robertson Paper Box Co.	Montville	Connecticut

IMPERFECT SCORES

GROUP A				GROUP B				GROUP C			
		Points				Points				Points	
Key	Rank	Credit	Debit	Key	Rank	Credit	Debit	Key	Rank	Credit	Debit
A-28	8	507.235		B-14	7	363.552		C-24	28	292.315	
A- 4	9	488.518		B-27	8	349.848		C-21	29	280.832	
A- 5	10	475.148		B- 2	9	312.352		C-29	30	173.102	
A-20	11	423.285		B-37	10	279.302		C-32	31	118.065	
A-29	12	418.083		B- 8	11	230.668		C-41	32	96.515	
A- 3	13	321.685		B- 4	12	209.302		C-22	33	83.032	
A- 8	14	285.850		B-31	13	207.798		C-31	34	39.900	
A-10	15	275.833		B-17	14	237.315		C- 5	35	12.398	
A-15	16	226.217		B-13	15	43.865		C- 3	36		27.648
A-21	17	185.152		B- 1	16	5.018		C- 7	37		36.008
A-25	18	184.100		B-36	17		66.933	C-35	38		55.633
A-33	19	183.865		B-24	18		87.767	C-34	39		271.465
A-12	20	82.585		B-18	19		123.467	C-30	40		388.096
A- 6	21	31.265		B-33	20		130.235	C-28	41		443.417
A-27	22	29.985		B-34	21		140.052	C- 6	42		572.268
A-11	23	28.635		B- 7	22		211.917	C-12	43		585.018
A- 2	24		49.683	B-21	23		258.182	C-54	44		734.133
A-13	25		107.385	B-11	24		293.867	C-46	45		871.933
A-26	26		140.935	B-30	25		371.152	C-47	46		1152.482
A-22	27		602.032	B-35	26		392.715	C-37	47		1327.615
				B-26	27		403.217	C-53	48		1445.402
				B- 9	28		448.418	C-26	49		1531.098
				B-28	29		616.100	C-42	50		1635.935
				B-33	30		865.898	C-52	51		2160.850
				B-29	31		1558.618	C-51	52		2376.585
				B-22	32		1942.185	C- 4	53		5435.315
				B- 3	33		3567.835				

Reports Outstanding:
A-7, A-24
B-6, B-30, B-32
C-8, C-9, C-17, C-18, C-19

Contests of 1927 and 1929 Now Closed

The Paper Industry 1927 Safety Contest is over. When the National Safety Conference met in Chicago in the fall of 1927, there were six mills in Group C tying for first place. According to the rules of the contest, it was necessary to withhold the award for the group winner, also the major trophy given by E. B. Fritz, publisher of THE PAPER INDUSTRY.

For twenty-nine consecutive months the mills in Group C have kept score. Month after month several mills reported "no accident". Gradually they dropped out and for some time three of the mills have been showing a perfect record. But it's all over now—The International Paper Company, Riley, Maine is the victor. This mill has made the remarkable record of twenty-nine months, or 352,150 man hours worked, without a lost-time accident, and is still going. It has thereby won the group cup to be awarded by the National Safety Council, and there seems to be a feeling that by reason of this mill's record-breaking performance, it wouldn't be surprising if when the National Safety Conference meets in Chicago this fall, the International's representative will take home not only the Group C cup, but also the major award, the handsome cup which will be presented by Mr. Fritz.

The Riley mill is a groundwood plant and has had an average of sixty employees during the twenty-nine months of the contest.

Now for the 1929 Contest. The Contest is over and the scores for the closing month of June will be published next month. Of course, the names of the winners will not be revealed until the awards are made at the National Safety Conference when it meets in Chicago the week of September 30 to October 5. Some fine work has been done by all those mills participating, and each member of the different groups is to be commended for its contribution to the cause of "Safety". The interest has remained at a high point during the entire six months, and the scores for May, published above, show a greater number of mills with perfect scores than any preceding month of the Contest.

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of May 31, 1929

PARTICIPANT	MILL	RATE	PARTICIPANT	MILL	RATE
International Paper Co.	Riley	0	Union Bag & Paper Corp.	No. 5	.33
U. S. Gypsum Co.	Gypsum	.003	Gardner & Harvey Co.	No. 1	.38
Kimberly-Clark Corp.	Neenah	.05	Kimberly-Clark Corp.	Atlas	.42
International Paper Co.	Webster	.12	Lincoln Pulp & Paper Co.	Lybster	.56
Gardner & Harvey Co.	No. 3	.14	Union Bag & Paper Corp.	Allen	.61
Upson Company	Board	.14	Lincoln Pulp & Paper Co.	Lincoln	.80
Adams Bag Co.	Chagrin Falls	.21	Bergstrom Paper Co.	Neenah	1.28
International Paper Co.	Winnipiseogee	.27	Union Bag & Paper Corp.	Fenimore	1.60
Gardner & Harvey Co.	Mill No. 2	.29	Northwest Paper Co.	Brainerd	1.87
			Lincoln Pulp & Paper Co.	Sulphite	2.30

Group A- Nekoosa-Edwards Paper Co. Combined Mills .43

Group B- International Paper Co. Niagara Falls .39

Secretarial Changes in American Paper and Pulp Association

Major Porter's Resignation Confirmed—Brief Sketch of Changes in Secretaryship During Past Twenty Years

CONFIRMATION of the resignation of Oliver M. Porter as secretary-treasurer of the American Paper and Pulp Association, which was reported in last month's issue of THE PAPER INDUSTRY, was obtained following the meeting of the executive committee of the association on June 19. Major Porter has been appointed manager of the National Kraft Paper Manufacturer's Association, which was organized six months ago, with J. P. Hummel, of the Hummell-Ross Fibre Corporation, president, and L. Bittner, of the Manufacturers Paper Company, acting secretary. Although Major Porter's connection with the American Paper and Pulp Association ceased at the end of June, he does not assume charge of the National Kraft Paper Manufacturer's Association until July 15.

In a statement issued by him to the membership of the American Paper and Pulp Association, Major Porter expressed his appreciation of the co-operation and support which he had received in his work for the industry. He said that during the nine years in which he had been connected with the association he had come to realize that it was not so much a question of money or organization which makes or breakes an association as it was that of men and principles, and indeed, regardless of the energy and ability of its executives officers, no association may achieve success without the loyal, active and envisioned backing of the executives of the industry which it represents.

Referring to the proposal of the Committee on Development of the association to appoint a manager for it, as set forth in the February and March issues of THE PAPER INDUSTRY, Major Porter expressed the hope that President Willson and his associates on the executive committee would receive the support of the entire industry in developing the American Paper and Pulp Association to a position of outstanding usefulness.

Major Porter's connection with the American Paper and Pulp Association dates from June, 1920, when he was appointed assistant secretary by Dr. Hugh P. Baker with the understanding that he was to develop a Woodlands Section within the association. This was accomplished to the evident satisfaction of all concerned; he was also successful in organizing groups of paper manufacturers and paper converters into associations that had not existed as such previously. Several associations which had gone out of existence were brought back into effective organization in this way and several new associations were formed.

In the same way as Major Porter was assistant to the executive secretary and served at the same time as secretary of the Woodlands Section, Charles W. Boyce, the present acting secretary of the association has served as secretary of the Woodlands Section and assistant to the secretary-treasurer. In editing and preparing for publication the monthly bulletin of the Woodlands Section called "Pulpwood", Mr. Boyce has displayed remarkable ability in publishing trustworthy information and statistics of pulpwood growth, production, consumption and prices. He has succeeded notably in setting forth in interesting fashion accounts of forestry developments that might otherwise have proved dry and unpalatable reading. It is indeed fortunate for the association that Mr. Boyce is available to continue the successful work of his two immediate predecessors in the office of secretary-treasurer.

It is proper at this time to note that besides carrying on his work as assistant secretary of the parent association, Retiring Secretary Porter has acted as secretary of the following organizations; Binders Board Manufacturers' Association, Glazed and Fancy Paper Manufacturers' Association, National Gummed Tape Association, U. S. Pulp Producers' Association, Waxed Paper Manufacturers' Association, Salesmen's Association of the Paper Industry, Woodlands, and Supply and Equipment Sections of the American Paper and Pulp Association.

In addition to his other work, Major Porter published during the past year a series of pamphlets describing the history, accomplishments and work programs of the American Paper and Pulp Association. These pamphlets, which were designed to define and explain the organization, purpose, activities and accomplishments of the association, have been widely circulated throughout the industry.

As already mentioned, Charles W. Boyce, the association's assistant secretary and forester, will serve as acting secretary until a new appointment is made by the executive committee.

Changes Made Since 1910

It may be of interest to note that during the past twenty years many changes have been made both in the secretaryship and in the form of organization of the American Paper and Pulp Association. No secretary served for so long a period as Dr. Hugh P. Baker, whose term lasted eight years —from 1920 to 1928. The complete history of the association, with lists of its former officers and affiliated associations, was given in the A. P. & P. A. Golden Anniversary Number of THE PAPER INDUSTRY, issued March, 1927.

After a reorganization, when I. Clarence McNair had resigned as secretary and treasurer in 1910, Arthur C. Hastings filled the offices of president, treasurer and secretary, with Arthur G. Maury serving as assistant secretary-treasurer. At the 1913 meeting of the association, Arthur C. Hastings was reelected president and treasurer, and Charles F. Moore was chosen secretary. Judge Moore was at the time editor of the weekly periodical called Paper, and on assuming the duties of secretary of the American Paper and Pulp Association, he was designated contributing editor of the now defunct publication. Arthur G. Maury continued to serve as assistant secretary and treasurer of the association.

At a meeting held a year later, another change was effected in the form of organization, which involved the retirement of Arthur C. Hastings as president and the appointment of a non-salaried officer in his place. At a meeting held a few months afterwards, the executive committee elected Frank L. Moore, of Watertown, N. Y., president of the association, Arthur G. Maury being named acting secretary and assistant treasurer. The office of secretary remained vacant during 1914, the official correspondence being conducted by H. H. Bishop, secretary of the Wrapping Paper Division, of which Frank L. Moore was chairman. Mr. Bishop issued circular letters bearing Frank L. Moore's name as president but reported at the annual meeting in 1915 as acting secretary, Judge Moore having retired meanwhile to become secretary of the Book Paper Bureau of Statistics, which was afterwards dissolved at the behest of the courts.

Then followed the appointment by the executive committee as general secretary and treasurer of A. D. Naylor, of Kansas City, a brother of E. H. Naylor, the able and widely known secretary of the Writing Paper Manufacturers' Association. A. D. Naylor assumed the duties of the office in May, 1915, at which time Arthur G. Maury retired as treasurer of the association.

Mr. Naylor served the association for two years and was

succeeded in 1917 by Linwood B. Steward, former general manager of the St. Regis Paper Company, who remained in office three years, being succeeded in 1920 by Dr. Hugh P. Baker who held the position longer than any previous incumbent. As a matter of record, it may be noted that Mr. Steward resigned as secretary on December 19, 1919, effective January 31, 1920. George W. Sisson, Jr., who was then president offered the post to Dr. Hugh P. Baker who began his duties in February, 1920.

This being an article which is concerned mainly with the vicissitudes of the secretary's office, mention of the leaders in the industry who have functioned during the past half century as presidents of the American Paper and Pulp Association has been confined to those who were influential in recent secretarial changes.

The current year is likely to be one filled with developments of great importance to the industry as a whole as well as to the association, and there will be constant need for careful guardianship and level-headed leaders. Much will depend therefore on the action taken by the special committee of the American Paper and Pulp Association who are now considering the selection and appointment of a general manager for the association. If the history of other trade organizations may be taken as a guide we are confident that the proposed change in management will yield results of a decidedly beneficial character.

Paper and Pulp in 1928

In connection with our editorial comment on "Significant Figures of Pulpwood Consumption", the following review of the annual census of paper production in the Weekly Business Review of the American Paper and Pulp Association for July 3 will be read with interest:

The 1928 data on paper production which the Bureau of the Census undertook at the request of the American Paper and Pulp Association has just been released. This annual census has made data available on the paper industry this year, whereas under ordinary circumstances, there would be no government figures available before 1930.

In 1928, paper production totaled 10,403,338 tons and pulp production totaled 4,510,800 tons. The paper production represents a 4 percent increase over 1927 and the pulp, a 4.5 percent increase.

There were several substantial gains in the 1928 production as against that of 1927 in several of the individual grades such as cardboard, with a 108 percent increase; binders board, a 52 percent increase; kraft wrapping paper, a 37 percent increase; tissue paper, a 10 percent increase and absorbent paper, a 17 percent increase.

The following grades showed substantial percentage decreases in production in 1928 as compared with 1927: News print, 6.7 percent; hanging, 14.5 percent; catalogue, 24.4 percent; leather board, 21.9 percent and building papers, 10.1 percent.

In the matter of pulp, the table showing the 1928 production by States shows some interesting developments. The following eastern States representing 46 percent of the total pulp, showed the following percent change from 1927: Maine, +3 percent; New York, —10.8 percent; Pennsylvania, +0.9 percent; New Hampshire, —10.9 percent; Massachusetts, ⅛1.7 percent, and Vermont, —39.1 percent. The total production of these States in 1928 was 2,073,258 as against 2,103,684 in 1927, a decrease of 60,426 tons or 3 percent.

The middle western States, Wisconsin, Michigan and Minnesota, representing 25 percent of the pulp production, showed an increase of 35,000 tons or 3.3 percent in 1928 as against 1927. Wisconsin pulp production increased 4.3 percent; Michigan, 1.3 percent, and Minnesota, 1.6 percent.

Wood Pulp Produced, by States 1928 and 1927

[This table gives statistics for all States for which separate figures can be shown without disclosing operations of individual establishments. Certain of the "Other States," however, reported larger amounts of pulpwood consumed and of wood pulp produced than some of the States shown separately.]

	Wood pulp produced (Tons of 2,000 pounds)	
	1928	1927
United States	4,510,800	4,313,403
Maine	970,690	942,162
Wisconsin	720,781	690,921
New York	633,182	710,227
Washington	349,107	268,349
Louisiana	226,708	179,878
Pennsylvania	218,598	216,587
New Hampshire	198,587	200,324
Virginia	189,925	170,630
Michigan	196,203	193,539
Oregon and California*	213,407	200,869
Minnesota	194,399	191,220
Massachusetts	32,370	31,822
Vermont	19,831	32,562
Other States†	347,012	284,313

* Combined in order to avoid disclosing quantities reported by individual establishments.

† 1928—Arkansas, Delaware, District of Columbia, Maryland, Mississippi, New Jersey, North Carolina, Ohio, South Carolina, Tennessee, Texas, and West Virginia; 1927—Delaware, District of Columbia, Maryland, Mississippi, North Carolina, Ohio, South Carolina, Tennessee, Texas, and West Virginia.

The World's Paper Consumption

THE PAPER INDUSTRY is indebted to its Berlin correspondent, Dr. Arthur St. Klein, for the subjoined table of statistics showing the per capita consumption of paper in all civilized countries as contrasted with population for the years 1900, 1913 and 1925.

Countries	Inhabitants in millions 1925	Kilograms of paper consumed per capita * 1900	1913	1925
Argentina	9	5	9	14
Australia	5.5	10	16	20
Austria	6.5	—	—	10
Belgium	7.5	9	17	23
Brazil	31	2.2	3	6
Bulgaria	5	1	1.5	2
Canada	9	17	20	22
Chile	4	4	6	12
Czechoslovakia	14	—	—	10
Denmark	3.5	6	18	24
Egypt	14	1.2	1.2	2.3
Finland	3.5	7	10	14
France	40	8	15	18
Germany	64	13	24	22
Greece	5.5	1.5	3	5
Great Britain	47	17	25	37
Holland	7	10	21	26
India	319	0.1	0.4	1
Italy	39	3	7	9
Japan	56	2	4	8
Jugoslavia	12	—	—	3
Mexico	15	2	3	7
Norway	3	13	18	18.5
Peru	8	1	3.5	5
Poland	27	—	—	4
Portugal	6.5	3	4	8
Rumania	17	1.5	3	8
Russia	131	1	2.5	1.5
Spain	22	4	7	8
Sweden	6	12	24	32
Switzerland	4	10	18	25
U.S.A.	100	17	38	69
Uruguay	1.5	4	5	7

The world's production of paper in metric tons of 2204.62 av. pounds is stated as follows:

Year	Tons
1800	10,000
1900	8,000,000
1914	10,000,000
1920	12,500,000
1927	18,500,000
1928	19,500,000

* 1 kilogram = 2.2046 av. pounds.

Geo. P. Lee, formerly vice president and sales manager of Mt. Holly Paper Co., Mt. Holly, Pa., is now with the Eastern Mfg. Co., New York City.

The Printer's Paper Problems[1]

By RONALD I. DRAKE
W. F. Hall Printing Company

IT is rather unseeming in one whose connection with the printing industry covers the brief span of six years, to attempt to present to you mature papermakers, a paper of this nature. I note that the subject on which I have been requested to speak is not a new one, but that it has been presented before this body many times. The earliest reference that I find is a paper by P. J. Massey, which was presented in 1920. It is interesting to note that the subjects which he discussed at that time are still the subjects to be discussed at this time. And the question naturally comes to mind as to why, after all these years, the printer should still have the same complaints to make.

I am not here to tell you how to correct these troubles, but rather to present in the best manner possible, the problems which the printers of today still have to face in producing for their customers—on your paper—a product which will be satisfactory from the standpoint of quality for the customer, production for the printer and absence of complaint for the papermaker.

Those of you who have heard papers by previous printers will recall that they stressed most strongly certain mechanical defects of the paper. It is, therefore, only natural that I should first present these same existing defects as I have met them in my daily contacts in the printing plant.

Importance of a Well-Made Splice

The first of these socalled mechanical defects is splices. It does not seem possible to convey to the papermaker the importance to the printer of a well made splice. If it were possible for you to see the lost production, the high waste, the battered plates and the broken down makeready which are caused by poor splices, I am sure you would appreciate that no amount of time and care in making them should be spared. Others have told you of the rapid progress being made by the manufacturers of presses in developing high speed web presses. You can appreciate, therefore, that if a poorly made splice is allowed to run through a press traveling at a speed of 900 to 1000 feet per minute and this splice fails, the end of the sheet is going to be caught by the revolving cylinders and wrapped many times about them before the pressman can stop his press. When you realize that the distance between the impression cylinder and the plate cylinder is a very definite figure which cannot be exceeded without more or less serious damage to the plates and to the makeready, you will appreciate that the added thickness caused by the wrapping of this loose end about these cylinders can easily destroy the plates on the press, and sometimes the press. Such destruction represents the actual value of the plates and the labor cost which consists of the work of several men for anywhere from 16 to 48 hours, and amounts to several hundreds of dollars. Isn't this too great a price to pay for a poor splice which could have been made a good splice by one or two men working carefully for about three minutes?

In addition, there is a loss of several pounds of paper which, when the occurrence of poor splices is frequent, very soon represents a 1500 pound roll of paper. And we still haven't considered the amount of money which the printer loses in production and time necessary to repair the damage.

Rolls with Soft Ends

Another defect which we are finding in increasing quantity is soft end rolls; and not only soft ends but we are finding soft spots and streaks which run entirely around a roll, varying from the ends to the middle. The buyer of printing today is turning more and more to the use of color and when a printer is forced to run a roll with soft spots, whether they be at the end or in the center of the roll, he finds it impossible to maintain his color plates in register. Also these soft spots under the tension of his press, cause the paper to form wrinkles and these wrinkles, representing a definite increase in the thickness of the paper, cause battered plates and broken down makeready. I cannot at this time emphasize too strongly the need for extreme care in shipping to the printers you may supply, only those rolls which are firm and hard from end to end.

The third defect which we will find is numerous hair cuts which cause the web to break, and frequent slime spots with their attendant lowering of the printing quality; not excluding the fact that, if they occur near enough to the end of the sheet, they, too, cause the web to break. And a broken web on the modern high speed rotary press means several minutes of lost productive time which, to use an old and trite saying, means money.

Four Determining Characteristics of Paper

Turning now to the problems associated with what I class as the physical characteristics of paper. I find that there are four definite characteristics by which a paper may be judged for its good or bad printing quality. Before considering these four characteristics, I believe it best to digress here for the benefit of those who are not familiar with the printing process.

In the process of printing, the printer assumes first that the sheet of paper on which he is to reproduce the thoughts and ideas of his customer is a plane, level surface, uniform in thickness from edge to edge of the sheet and from end to end of the roll. Needless to say, should any papermaker ever present a printer with such a sheet, he woould think the millennium had come.

There are on the press, two cylinders which are spaced about one-quarter of an inch apart. On one of these cylinders, the plates are locked; on the other, is built up with various thicknesses of paper, a packing, called the makeready which is intended to compensate for any variation in the subject matter, and in the thickness of the plates and of the paper.

Paper is not a finished material and in order to produce a readable, commercial product, makeready is necessary. Even enamel stock, which is considered to be as near a smooth, plane surface as can be made, requires makeready to adjust for its variations. And a satisfactory makeready is arrived at only at the expense of much labor and money.

When the makeready has been completed the distance between the face of the plate and the surface of the makeready is that represented by the thickness of the paper to be run. The amount of pressure upon the surface of the sheet should be only sufficient to cause what the printer calls a "kiss" impression—and a gentle one at that.

Formation—Returning now to consideration of the four determining characteristics, the first of these is formation. No explanation of the variation in the thickness of the paper, due to variation in the formation of the sheet, is necessary. You can appreciate that a wild formation will result in a spotted variation in thickness and, as a consequence, will vary the amount of pressure between the plate cylinder and the makeready cylinder, and when such wildness is excessive, this variation may be sufficient to crush the plate. Even should the plate not be crushed, the quality of the printing will suffer. With a streaked formation, the same conditions hold and we find both of these especially marked in the light weight catalog print papers.

Poor formation also causes serious loss of opacity and loss of resistance to the penetration of the printing ink. Another defect which I find in the light weight catalog print papers, especially in the 19, 21 and 22½ pound weights, is the presence of innumerable pinholes. These may be due to poor formation, though I have found them in sheets which I have considered a good formation. You can readily see that these pinholes allow the printing ink to pass directly through the sheet and cause that bugbear of the printer "show through".

Finish—The second determining characteristic is finish. And the most important factor about finish is that it must be as near uniform from side to side, front to back, end to end and edge to edge as human endeavor and mechanical perfection can make it. It need not be high or low or medium finish, but it must be uniform finish. I cannot stress that

[1] Paper read at the meeting of the American Pulp and Paper Superintendents Association, Wausau, Wis., June 6, 7 and 8, 1929.

point too strongly—for if the finish is uniform throughout a shipment of stock, the printer can adjust his press conditions and ink quailities to fit that stock and then be happy in the steady production of high quality work.

Regarding the relative value of a high finish or a low finish, I have only this to say—and it applies in all things—avoid extremes. The printer wants as smooth a printing surface as the papermaker can produce for him, but he does not want a hard, glossy surface one that is calender blackened, crushed and hydrated until no ink will "take" to the sheet. Nor does he want a sheet which is so low in finish that it may best be likened to the old-time corduroy roads for smoothness.

When the finish of a sheet is such that it may be likened to the above mentioned roads, it is necessary to increase the packing on the makeready cylinder. This increases the pressure on the plates, and will very quickly wear off the surface of the plates, causing loss in sharpness of detail and in printing quality.

From the number of tests which have been made in the laboratory, I find fairly definite evidence that in the book papers especially, the quality of the printing surface is intimately connected with the ash content and with the sizing value. This, of course, is not anything new—papermakers have always known that a well-filled sheet makes a good printing sheet. But we are going further than that. We are establishing standards of printing quality, and, we will use the filler content together with the glarimeter reading and the size test as a measure of that printing quality.

Therefore, for the papermaker to have a satisfied printer customer, let him make a uniform finished sheet of whatever finish his order may call for, avoiding the high gloss and polish of a crushed sheet and the low, rough and ragged surface of no finish at all.

Opacity—The third characteristic is opacity. As papermakers you are perhaps aware that the trend of the mail order houses is towards lighter weights in their catalog papers. And when there is considerable show through and strike through of the printing ink, the printer gets all the blame. There is a limit to what the printer can do with his ink to prevent "strike through" and there is nothing that he can do to prevent "show through" or "shadow through". Therefore, he turns to the papermaker and passes on to him all the complaints of the customer.

Much of this might be avoided by the papermaker closing up his sheet as was mentioned under formation. Then, secure the desired finish without crushing, which, as you all know, causes a transparent sheet. And, finally, fill it up with clay if a book stock, with a fine, soft, smooth ground wood, free from slivers and shiners, if it is a print sheet. But again, close up the formation and a marked increase in opacity will result.

Sizing—The fourth and final determining characteristic of printing quality is the sizing value of the sheet. I am going to make a statement here which is contrary to the generally accepted opinion of printers and papermakers and is one which you will have to take as a personal opinion because the amount of work which has been done in the laboratory regarding it, is not yet thorough nor complete enough from which to make a positive statement. This opinion is that the sizing value of a sheet of paper does not determine its resistance to the penetration of the printing ink. By this I mean that the harder sized a paper may be does not necessarily mean that that sheet of paper will be more resistant to the penetration of printer's ink. Most of you are familiar with the method used in determining the sizing value of a sheet of paper; namely, to float a small piece of the sheet under consideration on the surface of a standard ink solution. This solution is principally water with coloring matter. Printer's ink, as you all know, is basically oil with coloring materials. Therefore, it is not unreasonable to conclude that the relationship between these two is not similar, nor even proportional, in their penetrating effect on a sheet of paper.

This naturally leads to the question—what is the importance of sizing? The little work which has been done in the laboratory indicates that the importance of sizing lies entirely in its effect upon the three previously mentioned characteristics, especially upon the finish and the opacity of the sheet. You know that one of the purposes of sizing is to bind together the fibers which form the sheet and whatever filler material may be added,—especially clay. Therefore, if you deliver to the printer a sheet containing a high percentage of clay you must also have a high size value on that sheet in order to firmly bind the fibers and the clay into a compact mass. If you have a high filler content and a low size value, the printer, in endeavoring to print this sheet, finds that his ink picks the clay and the fibers from the surface of the sheet. This causes his inks to run dirty and his halftone cuts to fill up. Naturally, this represents lost production since, in order to maintain the quality of work which his customer demands, it is necessary for the pressman to stop at frequent intervals and scrub out his plates. It also causes a high waste of ink, since this clay and fiber which is picked up, due to the nature of the press rollers and of the ink, works back to the ink fountain and dirties all the ink in the fountain. Such ink must then be taken out of the fountains and discarded entirely, unless the printer is equipped with the necessary ink mills to regrind this dirty ink and salvage a part of it. Even with regrinding, the loss of ink so dirtied runs very close to 20 per cent.

These, then, are the four characteristics which I consider to be the determining factors of the printing quality of a paper. Since they are all easily determined by the properly equipped laboratory, it is not difficult to establish definite standards for these factors and I believe that I can prophesy at this time that you will find the larger printers of today establishing plant laboratories in which they will determine the printing qualities of all papers submitted to them and will accept or reject your papers on the basis of the four characteristics I have mentioned.

Loading and Shipping of Paper—There is another factor which has always been one of considerable contention between the papermaker and the printer, and about which there are as many opinions as there are printers and papermakers. I am referring specifically to the questions which arise in the loading and shipping of paper, whether that loading be in the form of rolls, skids or bundles. Considering the shipping of rolls, the first point I shall make is that much complaint regarding paper damage in transit could be eliminated by a careful inspection of the car in which it is to be shipped before loading the paper therein. I still find, after all the discussion there has been on this point, that rolls are loaded into cars in which there are bolts and nails protruding from the walls and the floor of the car, in which there is bad flooring or side walls and in which tar and oil has been spilled and allowed to remain to soak into the paper.

Next in importance to proper inspection of the car before loading, is that of having all the rolls of as near uniform diameter as possible. It has been found that in cars so loaded, the paper rides better and there is considerably less shifting of the load. This applies whether the rolls are loaded, standing on end or lying on the side. Further help to prevent damage may be secured through the use of bands. The best practice seems to be to use a band not less than two inches in width and to band the rolls together in units.

On one account on which damaged paper was running from two to two and one-half per cent per month—the use of such bands has reduced the loss to two-tenths of one per cent.

Another factor which must not be overlooked is proper wrapping of the roll, especially the ends. I recall that a mill once sent in a shipment of paper which they had banded at each end of the roll, directly next to the white roll, with a three-fourths inch steel band. When this paper reached the plant, these bands had cut into the rolls so far that it was necessary to strip from twenty-five to thirty pounds of white waste off of each roll, before they could be run. This mill unquestionably meant well—but it hardly seems possible that much thought was given to the problem—otherwise these bands certainly would not have been applied as they were. These bands would probably have been of some value in protecting the roll had they been applied on the outside of the wrapping.

Nearly all of the flat stock, which we receive, is shipped to us on non-returnable skids as we are well equipped to handle them. Such mode of delivery speeds up our production and reduces our storage space requirements materially. We, therefore, suggest to the mills shipping stock in this manner, that

they band or wire these skids together in units of three (on a 12 skid per car basis) and eliminate all blocking. Such method of loading cars, we find allows the skid to slide on its runners, when the car is jerked and banged about, instead of, as with a blocked car, having the paper slide off the skid. If the skids have worked up in front of the car door, we simply insert a heavy jack and jack back the entire end of the load until we get enough room to use our lift trucks.

In closing, I wish again to stress that whatever information I may have presented, is the result of the experiences and observations of our printing plant.

Perfect Pulp and Paper Mill Control[1]

By E. C. GILDENZOPF

IT is a real problem to organize and continue to maintain an effective and successful organization in a pulp and paper mill, as well as in other industries.

First of all the superintendent must know his job one-hundred per cent. He must have the faculty of surrounding himself with able men, whose loyalty he must win and hold, by backing them up to the limit. He must be able to hold his temper, no matter what happens. He must be able to smile when he feels like cursing. He must be a diplomat and must have the knowledge of every phase of the business, and be able to surmount difficulties. He must be a good scholar; not necessarily a mathematician. It means he must have a receptive mind and be willing to learn, as well as teach his men. He must be a graduate of human engineering. He must understand human nature and be able to put his ideas across to his men in a plain but effective manner. He must be able to maintain discipline, harmony and the respect of his employees at all times. At the same time he must mingle with his men, be friendly and sympathetic, have a smile for every man and show no partiality to anyone. If a man needs a reprimand, he should be able to give it to him with a smile, and never reprimand an employee in the presence of his fellow-workers. When a man deserves a reprimand call him in the office and tell him that he must not make the same mistake again, and never threaten to discharge him. Our skilled labor turnover is nil and our unskilled labor is one-half per cent.

I personally remember the most effective reprimand that I ever received was while I was employed in the finishing department for the Wausau Paper Mills Company, at Brookaw, Wisconsin, in 1903; and the superintendent that reprimanded me is the Father of our Organization, Fred Boyce, in whose honor this convention is being held in this city—and he did it with a smile; but it made a lasting impression with me and I made up my mind then and there that if ever I became superintendent of a mill, I would practice the same method.

It must be further remembered, however, that the superintendent alone cannot successfully run a mill without an effective personnel. It is necessary to impress on every man's mind that he is a spoke in the wheel of industry and also that the organization is like a great chain, and it is obvious that the chain is no stronger than its weakest link.

Weekly Meetings of Plant Personnel

The most efficient and loyal organization can be built in the following manner:

The superintendent should call a meeting every week-end. This meeting should be attended by the foremen of each department and one representative of the workers in each department; and at least once each month, one of the chief executives of the plant should be present. The presence of one of the chief executives is desirable for the reason that it will give him an opportunity to personally witness the enthusiasm expressed by the plant personnel. It will also give him an opportunity to become acquainted with the detail of the plant.

The following problems should be brought before the meeting:

(1) The necessary repairs to equipment. A list should be made of all the repairs necessary for proper maintenance of the plant, and each departmental foreman should receive a copy of this list, so as to make absolutely sure that nothing will be overlooked in the way of repairs. Each individual attending these meetings should be furnished with a memorandum book and during the routine of his daily work he should make note of mechanical defects that come to his notice. We all know, that in most instances, large mechanical failures are caused by minor defects which are very small at the beginning, but develop as time goes on into a costly shutdown. It is very difficult for the master mechanic or superintendent to notice every little mechanical defect. Therefore, it is necessary for them to have the full co-operation of all the departmental heads in their organization. It has been demonstrated with this procedure that in only a very few instances it has been necessary to shut down any part of the plant during the week due to mechanical failures.

(2) New projects should be discussed, as to how much the cost can be reduced by making these improvements and how long it will require to pay for it out of the savings. These new projects may consist of labor or power saving machinery or improvements and betterments on machinery which is already in operation. It has been found that the personnel operating the machines can make very valuable suggestions, relative to making changes that will reduce operating expenses, prolong the life of the equipment and improve working conditions in general. It has been said that this is the duty of the plant engineer and the superintendent. This is true, but obviously, the personnel operating the equipment is more familiar with the details than the plant superintendent and the plant engineer. To prove that this is true, we had a switch board operator in our power plant on each shift. One day about six months ago our chief electrician found one of these operators sound asleep. Naturally, this man was severely criticized for sleeping on the job. About an hour later, this same man came into my office and stated that he could tell us how to eliminate the switch board job entirely. I told him to proceed and give us his idea, and I assured him that he would be well taken care of. The result was that by making a few minor changes on the switch board mechanism and spending only $72.50, these two switch board operators were eliminated; which resulted in an annual saving of $5,000.00 in labor expense in that department.

(3) Manufacturing costs over which the mill personnel has control. These manufacturing costs should be explained in detail to every foreman, and the costs of the preceding week should be compared with those of the present week. This will show the personnel whether or not the costs in their individual departments have increased or decreased.

(4) Safety problems and careless practices. If any one got hurt during the past week call him in and have him explain just how his injury could have been avoided. If the guarding is at fault, it should be corrected by proper guarding.

(5) Quality of product. A plant chemist should be employed; whose duty it is to secure samples of competitors products. He analyzes these samples against our own product and submits a full report to me. It is then my job to make our product just as good or better than our competitors product. As you all know, there was a time when the superintendent hated the sight of a chemist in the plant, but I can truthfully say that I do not know how we would get along without a mill chemist at this time, and I believe that every progressive superintendent should be perfectly willing to co-operate with all the technical men in his mill to the fullest extent.

(6) Production—must be kept in line with quality. Any complaints that have been received during the past week should be fully discussed. The cause of the complaint should be determined and steps should be taken to guard against a recurrence. Here again it is the chemist's duty to determine the cause for complaint and state the characteristics of the defect, if he finds any. Quality of the raw material used should also be discussed, and if it is found that the raw material is responsible for the complaint or defect in the various products, the superintendent should immediately take steps to correct the trouble. If negligence on the part

[1]Paper read before the American Pulp and Paper Mill Superintendents Association at Wausau, Wis., June 6, 7, and 8, 1929.

of the machine tender is the cause, he should be called in and constructively criticized.

(7) If anyone of the departments has made an exceptionally good showing, they should be commended by the superintendent. If, on the other hand, a department shows a decided weakness, the superintendent should offer constructive criticism to the parties responsible. These criticisms, however, should be very carefully given, so as not to hurt the feelings of any individual in the meeting. I find that it is best to leave the impression with everyone present at these meetings that I am always willing to help them in every way possible. I try to impress on everyone present that if they have any grievance or any man in their department has a grievance, to bring same to my attention during the meeting and I will give same due consideration.

These meetings should not take up any more time than one hour and thirty minutes and all matter brought before the meeting and all matters accomplished at these meetings should be recorded in the minutes. All projects that are not completed should be carried on in these minutes from week to week until they are completed. Either the assistant superintendent or the office manager should act as secretary at these meetings. A general meeting of all the employees in the plant should be called once each month, and the superintendents should give them a general pleasant and encouraging talk.

A Suggestion System

It has also been found that suggestion boxes should be installed in each department in the plant; thereby giving every employee a chance to write out a suggestion and deposit same in the box. These boxes should be constructed similar to an ordinary mail box, equipped with a lock. No one should be given a key to these boxes except those authorized to collect these suggestions at the end of the month. The first most meritorious suggestion should be awarded a prize of twenty-five dollars; the second most meritorious suggestion should be awarded a prize of ten dollars and the third most meritorious suggestion should be awarded a prize of five dollars. These suggestions should be collected by a committee of three appointed by the superintendent. This committee should consist of three departmental foremen. They should bring the suggestions to the superintendent, and the superintendent, together with the committee of three, should determine how many of the suggestions are meritorious.

I personally remember that while I had charge of a certain New York plant, a suggestion was made by one of our employees that resulted in a saving to the company of ten thousand dollars annually; whereas the expense of purchasing and installing the equipment suggested was only twelve hundred dollars. It is surprising how much this method of organization inspires the men to enthusiasm. In other words, they will work for the company just as industriously as they would if they were part owners in the business. It makes them feel that they are really taking a part in the successful operations of the entire plant. They will discuss among themselves the necessities of trying to save money for their employer wherever they can. With this method the men will also make every effort to eliminate waste. It will also have the effect of synchronizing the different departments in the plant so that they will keep in close touch with one another, and they will endeavor to lighten the burden from one department to the other as much as possible.

General Rules of Conduct

"Let us endeavor so to live that when we come to die even the undertaker will be sorry."

It is well to impress upon every man in the organization to live up to the following specifications:

To respect his country, his profession and himself. To be honest and fair with his fellowmen as he expects them to be honest and fair with him. To be a man whose name carries weight with it wherever it goes. To base his expectations of reward on a solid foundation of service rendered. To be willing to pay the price of success in honest effort. To look upon his work as an opportunity to be seized with joy and made the most of, and not as a painful drudgery to be reluctantly endured. To remember that success lies within himself, in his own brain, his own ambition, his own courage and determination. To expect difficulties and force his way through them. To turn hard experiences into capital for future struggles.

To believe in his proposition, heart and soul. To carry an air of optimism in the presence of those he meets. To dispel ill-temper with cheerfulness; kill doubts with strong conviction and reduce the active friction with an agreeable personality.

To make a study of his job. To know his profession in every detail. To mix brains with his efforts and use system and method in this work. To find time to do every needful thing, by never letting time find him doing nothing.

To keep his future unmortgaged with debts; to save as well as earn for himself and his employer. To steer clear of dissipation and guard his health and body and peace of mind as a most precious stock in trade.

Finally, to take a good grip on the joys of life; to play the game like a man. To fight against nothing so hard as his own weakness and endeavor to grow in strength as a gentleman.

I could go on and on citing where this method of organization promotes loyalty and pays good dividends, but my allotted time of giving this talk has expired and I am now open for any questions that anyone of you may wish to ask.

Scientific Control in a Groundwood Mill[1]

By WILLIAM H. BRYDGES
Superintendent, Bedford Pulp and Paper Company

FROM the beginning of the recorded history of the mechanical pulp industry in this country very few changes have been recorded. Of course, more modern and efficient machinery has been introduced, but the art itself has practically remained unchanged, but the more modern machinery brought us much beter regulation, and the various other instruments that have been developed in the interest of a better and more uniform grade of ground wood has placed practically every groundwood mill in America under scientific control, and therefore, this paper is in the interest of scientific control more than any other factor.

It has been my good fortune to have been connected with the groundwood mills ever since Father said, "Bill, it is about time you started to hustle for yourself". That was back in the days when the groundwood mill was, more or less a separate institution from the paper mill. That is to say, that all the groundwood superintendent was interested in was the grinding of wood into pulp. It was not his job to convert the pulp into paper, consequently the only way the superintendent of a paper mill could get any cooperation from a pulp mill superintendent was by sheer determination or brute force. These days have passed, but a great deal was learned from these men, who were the pioneers in this line of endeavor. One result of this being that we grind wood today according to a standard. This standard is determined by the kind of fiber we want to make a certain sheet of paper and with our more modern machinery and our more scientific methods of control we can produce a grade of pulp suitable to our requirements.

Methods Used in One Mill

I have heard the remark made that your paper is made in your beaters. I agree that a good many grades of paper are reduced to the proper state of hydration to produce a desired result by the beater, but all of us who use a furnish of 80 per cent groundwood and 20 per cent sulphite, know that our paper is made in our groundwood mill.

I have spent a good many years of my life in a mill whose principal grade was wall paper or hanging, as it is more commonly called. It was there that I first learned that converting wood to a fiber of the right kind was an art. Uniformity and certain other standards, such as cleanliness in every respect and the elimination of sand and bark were absolutely demanded. The result of all this was that the

[1] Paper read at meeting of the American Pulp and Paper Mill Superintendents Association, Wausau, Wis., June 6, 7 and 8, 1929.

finished product was bound to be of the best of this particular grade. The owners of this plant, realizing the importance of producing a product of this kind, gave freely of their time and money to install all the necessary equipment to produce this kind of a pulp.

This mill had seven grinders—each grinder being driven by an individual motor and each one also being equipped with a Westinghouse Regulator. All records pertaining to the daily operation, such as quality, quantity, freeness and horsepower per ton are under laboratory control and reports are made to the pulp mill foreman at intervals of two hours. In this report is a reading of the freeness test of each grinder, as well as the test of the decker stock so as to get the average freeness of the stock at this point.

The superintendent, at this particular mill, is presented with a combined report of the preceding day's activity at the end of each twenty-four hours and in this way, he knows from hour to hour what changes, if any, have taken place.

The introduction of the freeness testing machines into the pulp mill has been one of the most outstanding improvements in some time and it has lightened the load of the superintendent to quite an extent. I know that most of the mills are operating today under this same method of control which I have just referred to because they are interested in economy and a better product.

Time will not permit me to go into detail regarding the various methods used to obtain any certain grade of groundwood. This subject has been covered very thoroughly by such splendid and well known pulp makers as Mr. M. J. Argy, George K. Walker, Levi Fralick, William Argy and others, who have devoted a lifetime to this important phase of the paper industry.

You men know what burrs you should use, how high your dam should be, what your stock temperature should be, what your freeness should be to best fit your machine and how much pulp you should get from a cord of wood. We all have certain rules to conform to in order that we may reach a certain definite goal and although they may vary some, on the whole they are very closely related.

Species of Wood Changes Method

When I left the Defiance Paper Company at Niagara Falls to take over my new duties with the Bedford Pulp & Paper Company at Big Island, Virginia, I changed from the grinding of spruce to the grinding of pine. Yes, there is some difference in the making of pulp from the different species of wood and a few changes are required. In passing I would like to say that while pine makes a stronger sheet of mechanical pulp than spruce on acocunt of pine wood having a longer fiber, being harder, containing more large, hard knots and of a darker color, close scientific control has been found necessary to obtain uniformity in quality of the pulp and quantity of production.

Pine wood being much harder than spruce requires more power per ton, more frequent dressing of the stones and the resulting faster wearing away of the pulp stone.

We are operating grinders today at our plant, that are driven by water wheels, one grinder on a line, and with the hard pine wood the grinders are subject to wide speed changes which affect the quality of the pulp. The speed of the grinders are now controlled by the Meyer pulp grinder governor. I want to touch briefly on the operation of this machine as it plays a very important part in the operation of our grinders.

Every waterwheel must run at a certain speed for a given head and gate opening if it is to deliver to the pulp grinder the maximum amount of power which it is capable of developing from the water used. Wheels running 15 per cent overspeed will produce on an average of 13 per cent less power from the water used than if run at their most efficient speed.

Wherever the head acting on a waterwheel changes, the speed should be changed if the maximum amount of power is to be obtained.

With the Meyer governor, a minor adjustment of a spring forces the waterwheel driving pulp grinders to run at the most efficient speed.

Grinding conditions may change as small sticks of wood or hard knots come in contact with the surface of the grindstone, but the turbine will remain constant speed, because the governor operates to maintain constantly the friction load for which the spring adjustment is set.

The variable water pressure in the cylinders maintained by the governor that maintain constant grinding friction mean a more constant grinding presure than a constant water pressure in the grinding cylinders.

The successful control of the speed of waterwheels necessitates the installation of governors. Waterwheels driving electric generators are satisfactorily controlled by oil pressure governors, which vary the gate opening with variation in load, since these changes in gate opening can not be made in too small a fraction of a second on account of the momentum of the water in the draft tube and penstock, flywheels are commonly installed for the purpose of reducing the rate at which speed changes will occur in the hydroelectric unit for given changes of load.

Water wheels driving pulp grinders can not be controlled in this way, as the ordinary grindstone has practically no flywheel effect, consequently, changes in waterwheel speed occur with incredible rapidity when the load is changed. Small fractions of a second merely, are consumed by some installations for speed changes of fifteen to eighteen revolutions per minute. Therefore, any governor to control the speed of a waterwheel—driving pulp grinder must act in a very small fraction of a second.

The only practical method for controlling the speed of a waterwheel driving a pulp grinder is through the grinder itself, that is, through automatically maintaining a uniform friction load on the waterwheel by changing the pressure on the wood in the grinder pockets.

This governor forces the waterwheel to run at its most efficient speed. Thereby it prevents stone breakage and makes possible the production of about 10 per cent more pulp at no additional cost except that of the wood ground, and at the same time improves the quality. It gives to the grinder man a larger measure of control over the quality of pulp produced. Besides improving the uniformity of pulp produced by maintaining constant speed, the governor helps the operator to secure any desired quality of pulp, within the limits of the economical operation of the waterwheel, by permitting the use of any grinding pressure or temperature desired.

The governor can be set to run the waterwheel at say 5 per cent over or under speed with an average loss of 1 per cent in efficiency, but with a change of 10 per cent in the grinding pressure.

Whenever water is wasting over the dam, or when efficiency can be sacrificed to get a certain quality of pulp even larger speed changes may be made to secure the desired changes in grinder pressure.

"Slow" pulp in the winter time may be "freed up" by grinding at higher pressure and temperature.

When the hydraulic turbine runs at uniform speed it delivers a constant amount of power to the grinder shaft, and a constant friction of wood against the surface of the stone is required to absorb that power. By maintaining uniform speed the governor maintains a uniform grinding load. This means uniform average pressure of the wood against the stones.

The governor is actuated by the speed of the turbine and grinder. It is action based on the positive method of changing the pressure in the grinder cylinders by means of a balanced valve in the supple line actuated by speed changes. This gives to the governor a responsiveness and a capacity for effecting large and rapid changes in volume and pressure of the water supply to the cylinders that enables it to control the grinder within a small range of speed.

American Engineering Co., Philadelphia, manufacturers of Lo-Hed Monorail Electric Hoists, has secured an order for 47 hoists from the Chesapeake and Ohio Railway Co., consisting of 31 one-ton hoists and 16 two-ton hoists.

Chemicolloid Laboratories, Inc., formerly at 44 Whitehall Street, is now located in larger quarters at 90 West Street, New York. Telephone numbers are Rector 4354 and 4355.

Something About a Few Things[1]

By T. L. DUNBAR

President, Chemipulp Process, Incorporated

THERE is an old Scottish saying that "Too much of aye thing is nae thing," or too much of one thing is nothing; hence the subject of this paper.

During the latter part of last summer and early fall, I had the pleasure of touring European and Scandinavian countries, with special interest centered on the visiting of sulphite pulp mills. Before digressing further, I want to pay the highest possible tribute to the pulp and paper manufacturers in these countries for the splendid hospitality accorded, not only myself but all American visitors with whom I came in contact. The spirit of hospitality is especially noticeable in Finland and through Colonel Serlachius, of Manta, Finland, the principal owner of the Serlachius mills, I had an exceptional opportunity of studying first hand the principles of sulphite manufacture, as carried out in Finland.

Observations in Scandinavia

Practically all of the digesters in the Scandinavian countries are equipped with indirect heating coils, the heating of the liquor being brought about in this manner until a given temperature is obtained, and then direct steam is admitted, as is our custom in this country, until the cooking has been practically completed. A short time prior to the completion of the cook, the digesters are practically drained of spent liquor and the pressure reduced; then, water is pumped into the digester to replace the liquor drained out, the drainage still continuing. The condensing of steam and gas vapors by the introduction of the water brings the pressure in the digesters down to atmospheric, at which time the digesters are dumped and washed out, very similar to the Mitscherlich Process operation, the cooked pulp having similar characteristics to the Mitscherlich cooked pulp.

The majority of blow pits or dumping chests are rectangular with open top. The pulp is thoroughly washed in the pits, after which as a rule it is forked onto a conveyor by hand or collected by mechanical appliances known as pulp diggers, and then conveyed to coarse knotters or direct to pulp separators. If pulp is passed through knotters as a preliminary treatment, it is then necessary to dewater it before treatment by openers or fiber separators as they are sometimes called, do not function well with a density lower than ten to twelve per cent. In either case following the openers, the pulp is passed through knotters suited to the purpose, and then over rifflers and through finishing screens, of which there are as many varying types, varying layouts and with possibly as many variable results as we have in this country.

Very few of the plants are cooking under fifteen hours and several are carrying their cooking time from eighteen to twenty hours. The acid strengthens vary considerably but, in general, the average is about the same as obtained in this country. I saw in one plant digesters of fifteen tons capacity being revolved. The pulp from these digesters was a very high grade article and I was told it was more uniform than the pulp obtained from vertical digesters. The revolving of digesters seems to answer the question of a positive uniform heat distribution throughout the mass of material being cooked. In practically all of the plants pyrites is being used instead of sulphur. The use of pyrites with its consequent weaker gas necessitates a considerable addition to absorption area; that is, in a 100-ton plant, practically double the tower area is necessary.

Intensive forestry cultivation is noticeable in all of these countries and is comparable to the devotion to our flower gardens in the country, as a consequence of which a very high grade, dense, long and strong-fibered wood is obtained.

The plant operations are carried out in a very efficient manner, more so than obtains in this country. I daresay that this is largely due to a more stable labor condition and possibly a better system of labor education. However, I do not feel that these countries are any further advanced technically except perhaps, in the recovery of by-products, principally that of waste liquor.

I paid particular attention to digester linings and found on an average a claim of from ten to twelve years for the life of linings. Due to the long cooking time, the life of the linings compares favorably with the life of linings in this country under a shorter cooking period, as the true worth of linings is measured by the number of cooks blown from them rather than the age. The linings in Scandinavian countries are considerably thinner than those used in this country, the joints and filling between bricks and against shell are generally made up of an almost neutral powder wet with silicate of soda, while in Germany and Austria the majority of linings are practically the same as those used in this country.

Humanity Factor in the Paper Industry

The main body of the Superintendents Association convenes for the purpose of discussing various phases of pulp and paper manufacture, processes, biological plant life, mechanics, new paper products creations, distribution, sales, cost accounting, etc., but in taking into consideration the foregoing we should also give some thought to the human base of the industry as well as the mechanical, chemical, and raw material problems.

We have to think about more than eighty per cent of 120,000 people employed in our industry as common laborers. These we must characterize as plastic human material, a great potential mass of human energy to be moulded and developed into the character, diligence, self-culture, self-discipline and self-control. With these come honesty, aggressive mental and physical efforts, a great dynamic force which is bound to bring success where failure ruled.

It has been said that God inspired two per cent of the men and women in the world to be character builders, inventors, to develop and lead the way and left the big job of ninety-eight per cent of the people of the world to be inspired by those in whom He created inspiration. Therefore, superintendents are leaders and teachers and, as such, should realize their responsibility. Who knows but what the son of John Smith may become one of the greatest surgeons of the day, prolong life, create a culture which will stamp out some of the dread diseases or something else equally valuable to human kind. Who knows but what some of the honest servants of toil or their sons may develop into a Demosthenes, a Plato, a Watt, Henry, or any of the hundreds who have liberally contributed to civilization and upbuilding of human kind.

We have many precedents established in the past, as well as the present. Looking back a few years we find as poor boys: Hoover, Edison, Beattie, Harriman, Banting, DeForest, and many others who today are sitting in "chairs of prominence" and whose names will go into the "Hall of Fame."

We also have men in our industry, who have toiled and fought against stupendous difficulties, with a heroism that needs no comments; they have accomplished and, if they, why not those under their direction, perhaps not to as great a degree, but commensurate with their mental development.

Now, how are we going to educate this imposing mass of humanity in our industry and to its betterment A man of philosophy has said, "The worth of a State in the long run is the worth of the individuals composing it." Another has said: "We put too much faith in systems and look too little to men." Now then, if the former is true, the worth of our manufacturing establishments is in the worth of our executives who are heading them. If the latter is true, it is time the manufacturers were putting more money into the education of their labor operators and less into systems.

The education of men in the sulphite mill is no doubt a vital factor in our aim for better scientific operation and unquestionably the time will come when we will measure our improvements by the standard of our workmen.

Just how to work out the best method of training for laborers and foremen is a question which is agitating the minds of chief executives today, as probably never before, human complexes, petty jealousies, Bolshevistic agitators and a tendency towards national demoralization growing at the

[1] Paper prepared for the American Pulp and Paper Mill Superintendents Association which met at Wausau, Wis., June 6, 7 and 8, 1929.

vitals of industry, although often unseen, are a few of the issues with which chief executives have to cope and thereby need the assistance of their superintendents.

A few companies have adopted mill vocational training, that is, divisional classes are formed and high class instructors are placed in charge of the classes so that the wondering worker not only comes in contact with practical application but with the knowledge of what it is all about. I understand that such class meeting times are subject to the call of the instructors who keep in touch with the advancement of the members in his class.

Many companies now having monthly foremen meetings and are obtaining great benefit therefrom, not only from the standpoint of greater efficiency from the foremen in question, but by the education of sub-foremen and the workers themselves. One executive made the statement that he has three men in practically every department capable of assuming the roll of foremanship, all of whom have been educated to this point through class study and foreman's training courses.

Foremen can also greatly benefit themselves through correspondence course training, the most outstanding Pulp & Paper Mill Correspondence Course doubtless is that of the Institute of Industrial Arts, Gardenvale, Que., but much can be gained from any good constructive course.

To the Sulphite Superintendents and others interested, the two weeks course in training given from time to time by the Forest Products Laboratory at Madison, Wis., is representative of a veritable fountain of knowledge. With knowledge comes wisdom, the power to lead, and happy is the executive who has the faculty of having his employees work with him instead of for him.

Rosin Sizing[1]

By ALMERON W. WICKHAM

Superintendent, MacAndrews & Forbes Company

THE following article regarding the use of rosin size is compiled from the observation and practical experience of a papermaker. The opinions expressed are to be taken as the belief of one man, except in statements where credit is given for quotations. The final results of more than fifteen months operation with a control system are positive and beyond dispute.

It is a matter of history, although within the memory of many mill superintendents of today, that rosin size was formerly made at the mill, by or under the supervision of the superintendent. A stated weight of pounded rosin was cooked or boiled with a stated weight of soda ash, and measured quantity of water, until the wax was formed.

This method was superseded by the steam jacketed kettle, instead of the direct application of steam to the mixture. This method overcame the undesirable, and variable factor of condensation by direct application of steam. Then came the manufacture of size from the gum rosin, by companies in a commercial way, and the marketing to the mills of the wax size. Later and comparatively recently, wood rosin size was distilled from the pine wood and stumps. These processes resulted in a more uniform product for the use of the papermaker, and simplified its use by them.

Various emulsifying systems have also been invented, with the idea of obtaining greater efficiency. One authority states "that rosin size does not form a film, and does not close up the inter fiber spaces, unless used in excessive quantities, which causes foaming, brittleness, and a deterioration of sheet owing to excessive acidity caused by excess of alum necessary to precipitate the size. Rosin size does, however, fill up the pores of the fibers themselves, with a rosin size aluminum precipitate, which renders the inter fiber spaces more water resisting, through a surface size diffusion effect." "Good rosin-sizing can be more efficiently done with the minimum amount of size when the degree of beating is sufficient to give a maximum of inter fiber space by having a high degree of hydration". That is, the beating and hydration must be consistent with the character of the paper being made, and the formation desired.

It is generally conceded that the strongest papers are unsized, and will maintain their strength provided the hydrogen-ion content is near the neutral point. Paper with too high acidity will deteriorate and loose its strength by oxidation, and high alkilinity will soften paper by its taking up more moisture than it should.

The degree of sizing, or resistance to water absorption, must be graded in accordance with the uses to which the paper is to be put, and the paper manufacturers should be made acquainted with the requirements that they may more intelligently do their best to conform to them.

In certain types of board, such as test liner or container board, it is of great importance to make perfect adhesions between surfaces of paper, and hard size papers resist penetration of the colloidal adhesive, and a moderate degree of penetration into the inter-fiber spaces is necessary to make a proper bond. Hard size papers require special adhesives.

Temperature of stock during beating has an important bearing on sizing. James Strachan in his exhaustive article on hydration, or inhibition, as he terms it, gives the following results from an experiment carried on with cellulose:

Temperature of Water	Percent of Hydration	Percent of Dehydration
51.2° F.	69.72	——
107.6° F.	66.80	4.2
140.0° F.	63.98	8.2
212.0° F.	56.51	18.9

Dehydration produces porosity and air spaces in the stock, and with the use of high temperatures dehydration is continuously progressive. The experience of the practical papermaker, bears out the truth of this statement, and he finds that when his stock is too hot, good sizing cannot be obtained. It has been demonstrated that good practical results can be obtained with a temperature of 105° to 110° F. and that good hydration can be secured at this temperature. Experience has demonstrated that the size or emulsion of size should be added to the beater as soon as possible after it has been completely furnished. Undoubtedly finely divided rosin as furnished to the beater of stocks, sticks on the fibers and fill the pores and inter fiber spaces, so that when the aluminum sulphate is added just before dumping, a rosin aluminum precipitate is formed on the fibers.

Difference in Melting Points

A considerable difference in the amounts of various commercial sizes in the degree of sizing effect has been found, probably the consequence of a marked difference in the melting point of various rosins. The size manufacturers in order to get best possible uniformity in manufacture, blend the various grades. But in spite of this there is a great difference in melting points of the rosin in the size as furnished to the paper mill. There is possibly a difference in this respect also caused by the methods of the various manufacturers.

Many tests have been made by the papermaker to ascertain the melting point of rosins as they come to him. There are various methods of doing this, and in one particular test on size from three different manufacturers the following results were obtained:

No. 1 Melting point starts at 178° F. completed at 210° F.
No. 2 Melting point starts at 160° F. completed at 174° F.
No. 3 Melting point starts at 150° F. completed at 165° F.

This difference indicates that size with lowest melting point, would be more rapidly fluxed on the dryers of the machine, than the others. It was found also that the size of lowest melting point, gave the finest rosin aluminate precipation, and less size could be used. As a matter of fact in repeated tests, it was found that 25% less could be used of No. 3 than of No. 2 and 40% less of No. 3 than of No. 1 and 20% less of No. 2 than of No. 1. These tests were made on sizing the liner of tests liners. While the tests regarding melting point of rosin size just mentioned, must not be considered as absolutely accurate, they do show that some degree of variation in melting point of various rosin are to be expected. Innumerable tests might be made, all showing

[1] Paper read at meeting of the American Pulp and Paper Mills Superintendents Association, Wausau, Wis., June 6, 7 and 8, 1929.

a different result, and it appears impossible to establish a standard, for melting point of rosin size.

There is no question but in many cases in the manufacture of paper and board of various grades that an excess of both size and alum are used, very much more than is required for efficient results. A proper proportion of each is also very important.

Today a positive method has been invented and perfected that can be used to check up at certain vital places all the various elements and conditions that effect sizing, by the application of the hydrogen-ion comparator, and by its intelligent use of the pH values can be adjusted in the various points of the process to a close conformation to the perfect curve. By this means any degree of sizing for waterproofing and water resistance of paper, can be secured and maintained.

With the use of this control system there is a certain amount of coagulation taking place, and the sizing effect cannot escape on the machine because of this coagulating and neutralization process continually taking place. Owing to the fact that size and alum are reduced to a minimum, foam is also reduced, and can be controlled by proper pH determination.

In making colored lined boards this control system has been found particularly valuable, in enabling uniformity of shade to be maintained throughout an order.

When using a closed, or a partially closed white water system on the machine, either with or without a chlorinating system pH values can be adjusted to take into account any variables that may occur and proper adjustment secured by use of the control system.

With the system under proper control, it was found that a better formed sheet and increased production could be obtained.

Owing to the simplicity of the control process, any intelligent workman can easily and quickly learn the method of application, and keep an absolute check on operation. A standard graph or curve can be worked out and used to check up the operations at certain stated times, and will show where corrections are needed to keep results uniform.

Fifteen months of continuous operation in a plant making 165 tons per day of finished board, of various kinds, grades, qualities, and colors, has demonstrated practically and thoroughly, the improved product, and money saved on size and alum, secured by its use.

Can Technical Development Help the Paperboard Industry?[1]

By C. C. HERITAGE

In Charge, Section of Pulp and Paper, Forest Products Laboratory[2]

THOSE men who are in a position to know say that the paperboard industry is not so profitable as it might be, and that this situation is caused by overproduction. Strangely enough, one seldom hears quality mentioned. Let us consider the technical attack that may be directed on this situation in order to make the board business more profitable.

If paper board were to be manufactured for the very first time, the requirements of the product as it would be sold would certainly receive most careful consideration; the success of the venture would depend upon meeting them. There are two general classes of requirements: The first may be called actual requirements of use, or technical requirements; and the second psychological, or requirements for sales. The first considers only the question of the board standing up in service, while the second considers those additional requirements necessary or desirable in selling. Both are essential; neither may be ignored. If a board meets its requirements, it is a quality product and quality products are seldom unprofitable.

The technical requirements for container liner, for example, may be analyzed under strength, stiffness, and resistance to penetration by moisture. Strength is the capacity of a material to resist rupture on the application of an external load. There are many kinds of rupture and of loads. In the example chosen, the board must resist rupture in tension, in compression, in bending as a beam, through scuffing, through peeling, under scoring, and under various kinds of impact, including those that tend to cause puncture. Stiffness is the capacity of a material to resist being deformed on application of an external load; there are various kinds of stiffness. Resistance to moisture may be expressed as a rate at which moisture travels into the board or as a quantity that the board will absorb. Is not rate the important thing, and if so is not rate at the surface still more important? If the rate of absorption of moisture at the surface is controlled over the whole board, is not the entire moisture situation under control?

Nothing has been said thus far about weight and thickness. These have to do with the structure of the sheet. Recent studies indicate that structure very largely governs the important kinds of strength and stiffness, and obviously has much to do with resistance to moisture penetration. Structure, which may be considered the result of the formation (fiber arrangement) and the density, is basic to may properties. Finish and density go together, not necessarily because such association is desirable, but because it can not well be avoided with the equipment available. Structure and finish have the very practical commercial aspect of sheetage (square feet of board per ton).

How many of these phenomena can be measured and dealt with on a numerical basis, correct and precise? Very few. If the paperboard industry is to produce quality products, meeting technical requirements for present and increasing future uses, these requirements must be studied, and correct and precise methods of evaluation must be established.

The raw materials employed are probably the most important consideration relative to the quality and cost of the finished product. Both laboratory work and mill trials are essential to the establishment of the relationships involved, with a given set-up of mill equipment. Test methods for pulps are available. The evaluation of waste papers is a subject that has received little attention in any quarter. Certain grades of paper can be eliminated entirely for particular grades of board. For example, dirty stock, soft-fiber stock, treated papers, highly colored packings, and particularly nonuniform packings must not be considered for high-quality container liner. The rest of the packings can be classified by determining their weight equivalent for satisfactory quality in terms of some particular Number 1 Kraft pulp, through mill trials. These results, together with the cost of each packing, determine at any particular time which waste-paper packing is the cheapest, considering the quality of the final product.

In the preparation of the stuff, study must be made of the best method for development of the desired properties in each pulp or grade of waste paper employed. It is hardly rational to expect the best results through giving the same preparation to a wide variety of fibres all mixed together before beating.

The questions I have raised, both directly and through implication, all infer the basic operating control of raw material disbursement by properly qualified storekeepers and of stuff preparation through the recording of consistence, roll settings, power consumption, temperature, and similar factors.

Finally, study of the requirements for sale, as I have previously defined them, involves both the appearance of the sheet and its advertising value. The first of these two factors is concerned with cleanliness and finish; the second with color and the capacity to take print. Such a study will lead to specific products for particular consumers, a field in which the paperboard manufacturer should be able to secure a volume of profitable business, one limited only by his own creative ability. It seems to be better business to make twenty products at a profit than one at a loss.

[1]Paper read before the American Pulp and Paper Mill Superintendents' Association at Wausau, Wis., June 6, 7, and 8, 1929.

[2]Maintained by the Forest Service, U. S. Department of Agriculture, at Madison, Wis., in cooperation with the University of Wisconsin.

Canadian Technical Section Meets

Members Discuss Research, Inspect Institute and Paper Mills at Summer Meeting

DEPARTING from the custom of preceding years, the summer meeting of the Technical Section of the Canadian Pulp and Paper Association, which was held in Three-Rivers and Quebec on June 19, 20 and 21, was considerably more than a mere pleasure outing combined with instructive visits to mills, presenting some exceptionally interesting features. With the completion of the erection of the Pulp and Paper Research Institute and of the equipment of the laboratories which it houses, the question is now being put very forcibly before the members of the Section of the use to which the wonderful facilities thus afforded are to be put, and it was the avowed object of the organizers of the meeting that the problem be discussed as thoroughly as possible by the membership at large with a view to finding the most practical and satisfactory solution of the problem.

Those members who gathered in Montreal on Tuesday, the 18th, paid an informal visit to the Institute, to enable them to judge at first hand of the facilities for research offered by this institution. In the evening they boarded special cars for Three-Rivers, where they were joined by a number of members from that district. Wednesday was spent visiting the Quebec Government School of Paper Making and the mills of the Canadian International Paper Co., the Wayagamack Pulp and Paper Co., the St. Lawrence Paper Mills and the Canada Power and Paper Corporation. They were entertained at luncheon at the Chateau de Blois, and among the guests were representatives of the civic authorities, government officials and executives of the various pulp and paper companies of the Three-Rivers district. The party then entrained for Quebec City, where the whole day Thursday was devoted to an important discussion of the functions of the Research Institute in its relation to the Technical Section.

The Institute and Its Future Need

In opening business sessions on Thursday morning, R. A. McInnis, chairman of the Section, explained very concisely the purpose of the Research Institute and his conception of the function of the Technical Section in relation to it. He particularly stressed the necessity of whole-hearted and enthusiastic support and co-operation on the part of the members of the Technical Section and the executives of the Canadian pulp and paper companies: the possibilities before the Research Institute are practically unlimited, and it will be what the industry makes it.

Dr. J. S. Bates was then called upon to speak on the Institute. Dr. Bates' opinion carries the weight of one who was superintendent of the Pulp and Paper Division of the Forest Products Laboratories for five years and who was the first chairman of the Technical Section. The Institute is the direct result of the co-operation of three organizations of national importance in the life of the country: the Federal Government, McGill University, one of the oldest and most important educational institutions in Canada, and the Canadian Pulp and Paper Association representing the greatest manufacturing industry in the Dominion. For many years past there has been successful co-operation between each pair of these three organizations, which augurs well for the success of the new venture, in spite of the difficulties which must necessarily arise in working under the joint direction of three bodies having such different types of organization as the three parties to the arrangement. While the part played by the association in providing the building and a large part of the equipment, as well as furnishing considerable sums for the operation of the Institute, is frequently emphasized, and rightly so, it should not be forgotten that the Government actually contributes more than twice as much as the association for the current expenses of the Institute.

Turning next to the use that should be made of the facilities provided by the Institute and the nature of the work which should be carried out, Dr. Bates said it should be of a fundamental character. General problems of a basic nature to the industry should be its field, leaving the immediate application of the results thus obtained to the technical men in the mills. The very fact that such work is being carried out will have the effect of stimulating the men in the mills to greater efforts in solving the problems of a more immediately practical nature and will serve to spread the spirit of research till it permeates the whole industry. The work of the Institute is merely beginning, and in the natural course of events it is destined to continue indefinitely. It is, therefore, necessary to plan for the future and to lay down a broad and general program which can be extended or modified as may be required by changed conditions in the industry.

Experimental Mill and Laboratory

E. P. Cameron, Director of the Pulp and Paper Division of the Forest Products Laboratories of Canada, then read a paper on the experimental pulp and paper mill and laboratories at the Research Institute. The design of an experimental laboratory of semi-commercial size, said Mr. Cameron, must be based on a few fundamental considerations which are essential to its successful operation. Primarily, the work of such a laboratory lies in the development of process such that the results obtained are directly applicable to commercial operation. Perhaps the next most important consideration is accuracy of measurement, for without accuracy the whole purpose of the installation is lost. Finally, flexibility, meaning capacity for change in operating conditions without major alterations in installation detail, must also be given most careful consideration. These are, perhaps, the most important fundamentals which must be considered in semi-commercial laboratory lay-out from the point of view of ease and accuracy of operation; but when it is remembered that the experimental plant is, after all, a more or less true replica of its commercial prototype, the importance of process lay-out and general plant aspect should not be lost sight of. Such were the guiding principles followed in designing the experimental pulp and paper mill and the laboratories of the Pulp and Paper Division of the Forest Products Laboratories at the Research Institute, and the detailed description given by Mr. Cameron showed how efficiently they had been applied.

The University's Contribution to Research

Dr. Harold Hibbert, Professor of Cellulose and Industrial Chemistry at McGill University, briefly outlined the fundamental chemical research carried out during the last three years under his direction by the university as its part of the co-operative arrangement. Starting under make-shift conditions, without proper accommodation and with very little staff, the organization has been gradually built up and valuable results have already been obtained, which have been made known by the publication of 14 papers, while 20 more are now in the course of preparation for publication. At the start it was decided that a comprehensive scheme of scientific work on the principles involved in the manufacture of sulphite pulp offered the best possibility of yielding results likely to prove of technical value to the members of the Pulp and Paper Association, and the problem was attacked along several lines which may be classified broadly under three headings: (1) the acquisition of data relating to the actual cooking operation; (2) the method of analytical control involved in the evaluation of the raw, intermediate and finished products; (3) data relating to the isolation of the constituents of wood and to their ultimate chemical structure and properties as individual substances.

The first investigation carried out under (1) was the relationship between the temperature and pressure of aqueous solution of sulphurous acid, as this data was not to be found in the literature. The work was carried out successfully, and the results have already admittedly proven of considerable value to the industry. A second problem, concerning which no information was available, was that relating to the action of cooking liquor on cellulose and pulp of various origins; and it was shown that, contrary to previously accepted ideas, wood pulp undergoes a marked alteration in quality under the influence of fresh cooking liquor at temperatures within the normal cooking range. Work on the action of sulphurous acid on unsaturated aldehydes was carried out because it is very generally conceded that lignin probably contained an unsaturated aldehyde grouping. The results obtained to date, showing as they do that the reaction results in the formation of sulphonic acids functioning as very strong acids, promise to be of great practical value to the sulphite industry in explaining the reasons and causes of "burnt cooks". Work has also been done on securing data concerning the penetration of liquids into fibers generally, and the results have already proven of considerable value in relation to the question of sinking losses in driving pulpwood to the mill.

In spite of the excellent work accomplished, the investigations on methods of analytical control and evaluation of finished products is probably one of the most unsatisfactory parts of the programme. Much time and effort was spent in investigating the determination of alpha-cellulose, of pentosans and of the copper number; and it has merely shown that these determinations possess only a restricted use in the evaluation of pulp.

Better progress was made in studying the structure of the constituents of wood. A new and simple method was found for isolating lignin in what is considered to be its unchanged form, and a considerable amount of new data is now available as to its structure. It would appear to be mainly aliphatic in character, rather than aromatic, the latter constituting only about 15 per cent of the weight of the entire molecule. The results obtained in a study of the kinetics of the reaction of hypochlorous acid appear to throw considerable light on the mechanism of the bleaching process, and may possibly lead to important modifications in the present methods of bleaching sulphite and kraft pulps. Finally, an extensive series of investigations on simple substances related structurally to cellulose have contributed valuable fundamental data, the application of which to the study of cellulose may lead to interesting and possibly valuable results in various fields.

Members Enjoyed Banquet and Visit Mills

The afternoon session was given over to the reading and discussion of the committee reports, of which there were six; namely, the committees on mechanical pulp, fine paper, newsprint, pulpwood, sulphate soda and kraft pulps, and heat and power. The work of the committees was hampered by the difficulty of holding meetings of all the members so that most of the work had to be done by correspondence. But in spite of this handicap the wishes of the executive committee of the section were very well met, and in every case the committees were able to make valuable suggestions as to the problems which could be most advantageously investigated at the Research Institute. The members present appreciated the difficulties under which the committees had labored, and the discussion showed that the Section was very much pleased with the manner in which the committees had considered their respective subjects and brought in their recommendations for the consideration of the Section.

In the evening a banquet was tendered to the visitors, at which Hon. L. A. Taschereau, Premier of Quebec, and others prominent in the public life of the province spoke. Friday was devoted to visits to the mills of the Anglo-Canadian Pulp and Paper Mills, at Quebec, and the Ste. Anne Division of the Abitibi Power and Paper Co., at Beaupré, both of which, being of recent construction and modern design, afforded points of special interest to the visitors. Complete descriptions of both these mills can be found in the March, 1928 issue of THE PAPER INDUSTRY.

New Catalogues, Books and Publications

American Hoist & Derrick Co., St. Paul, Minn.—An illustrated folder describes the American Mine Scraper Hoist. This hoist is only 3 ft. high by 4 ft. 8 in. long, and is operated by compressed air. Some of the outstanding features mentioned are: piston valves, band type frictions, cast steel cut stub tooth gears and Alemite lubrication.

Combustion Engineering Corp., New York City—A new product put out by this company, the C-E Water Level Indicator, is a device for indicating the water level in the boiler at the eye level of the operator. The indicator operates in the cold water circuit and is said to be especially valuable at higher pressures. A complete description with diagrams is included in a new folder now available. The May issue of The Safety Valve, a bulletin published by this company, contains an article on "Baffling for Straight Tube Boilers" by Walter Siegerist, assistant general sales manager. Copies upon request.

Connersville Blower Co., Connersville, Ind.— Bulletin No. 233 supersedes No. 33 descriptive of this company's Victor gas boosters for gas burning furnaces and ovens, booster service on distribution systems, and processes where clean gas is handled.

E. F. Houghton & Co., Philadelphia, Pa.— "Houghton on Industrial Plant Lubrication" is the first of a series of booklets on this subject prepared by the Houghton research staff. Copies upon request.

James Leffel & Co., Springfield, Ohio—Bulletin W-203 is the first of a series which this company is preparing on typical Leffel water wheel installations, and features the open penstock installation with submerged type gate operating mechanism.

Link-Belt Company, Chicago—A 48-page, profusely illustrated book describes the Link-Belt line of gasoline, Diesel, electric and steam operated cranes, shovels and draglines. Detailed specifications and the outstanding features and construction details described. This book is No. 1095 and will be sent on request.

Locke Regulator Company, Salem, Mass.—Catalogue No. 50 introduces a new line of Locke regulators. The book is divided into seven parts: hydraulic regulators for controlling fuel and air supply to boiler furnaces; combination pressure regulators for controlling the flow of steam, air, gas, water or oil; balanced valves and self-contained automatic pressure reducing regulators; pump governors; tank and float valves; temperature regulators, and engine and turbine stop equipment. The text is amplified with numerous illustrations and diagrammatic figures.

A. C. Nielsen Company, Chicago—Survey No. 1280. Processed Felts on Cylinder Machines. Boxboard Plant finds superior to white felts. Extensive use of a processed felt by a Canadian producer indicates its economy over white felts of several makes tried. Report gives comparative figures of life and cost for processed and white felts at top and bottom positions, showing savings of 10 to 50 per cent. Quality of board also considered to be improved.

These surveys are ordinarily available only to Nielsen Survey index subscribers, but by special arrangement a complimentary copy will be sent to any user of such equipment who will write directly to the company asking for surveys by number and mentioning The Paper Industry.

Ramsey Chain Company, Inc., Albany, N. Y.—The new Ramsey catalogue, No. 628, is now ready. There are eighty-five pages of illustrations and data on power transmission with silent chain, written in a plain, understandable manner. This catalogue will form a valuable addition to any technical library.

A. O. Smith Corporation, Milwaukee, Wis.—"The New Way" explains the design and construction of SMITHWelded pipe and joints. A bulletin No. 508 on the subject of SMITHWelded Sulphate Digesters is of special interest to paper and pulp mills.

Uehling Instrument Co., Patterson, N. J.—A new six-page bulletin, No. 150 describes the Uehling Combined Barometer and Vacuum Recorder, an instrument for steam turbine operation. This device gives the whole story of condenser performance on one chart.

BOOK REVIEWS

German Work on Paper History, Raw Material and Half Stuffs—A book entitled "Technik und Praxis der Papier-Fab-rikation" has been published recently by Otto Elsner Verlagsgesellschaft m. b. H., Berlin, S. 42, at 26 marks. This book is Vol. III of an encyclopedia of pulp and paper manufacture, chapter I of which, by F. von Hoessle, deals with the history of papermaking and is especially interesting as the contribution of a widely known German historian who has specialized in the history of German paper mills.

Chapter II, which treats of plant fibers as raw material for paper, was written by Doctor Korn, who is the successor of Professor Herzberg, the noted authority on paper testing. The use of rags and grasses in papermaking and the bleaching of such fibers are handled by F. Mosel, L. E. Walter and Doctor Opfermann. Mosel and Walter are practical papermakers and Doctor Opfermann is a pulp chemist, besides being the editor of the Papierfabrikant, of Berlin.

The book is quite interesting and the illustrations are for the most part informing and instructive, so that whoever is interested in Continental papermaking and desires a modern compilation on the subject may be advised to procure a copy of this German publication.

The encyclopedia will be completed with the issue of a fourth volume of the series dealing with mechanical woodpulp. The volumes will then represent the latest German sources of information on modern pulp and paper manufacture.

Multiple Motor Winder Drive

By S. A. STAEGE, Industrial Engineer
Westinghouse Electric & Manufacturing Company

THE winding of firm, uniform rolls is becoming more and more necessary as competition increases and customer's demands become more exacting. Rolls wound too hard or too soft or with hard and soft spots are not tolerated and rejections are more alarming.

With conventional methods of the past, it has been difficult if not impossible to entirely overcome these truobles, as there have been no accurate methods of determining whether the winding conditions were exactly right, and it has been impracticable to secure correct and continuous manipulation of the mechanical devices to secure uniform winding.

To overcome these difficulties and shortcomings, the Westinghouse Company some years ago conceived the idea of using an individual electric motor for driving each winder drum, with suitable electrical characteristics and control means to automatically provide the ideal winding conditions for all paper speeds and all diameters of roll. This to be accomplished without attention or manipulation on the part of the operator to obtain these ideal results. To this end, suitable individual electric motors were applied to each of the drums of a four drum winder operating on book paper and the idea was proved to be correct and the principles right. It was shown in these tests that proper control of the relative speeds and torques of the winder drums could be obtained automatically without dependence upon the operator. The full and complete development of all of the details of this method and system of drive was of course, the subject of a great deal of painstaking study and investigation to determine just what conditions are necessary for the proper winding of the roll and to adequately and fully meet those conditions and requirements.

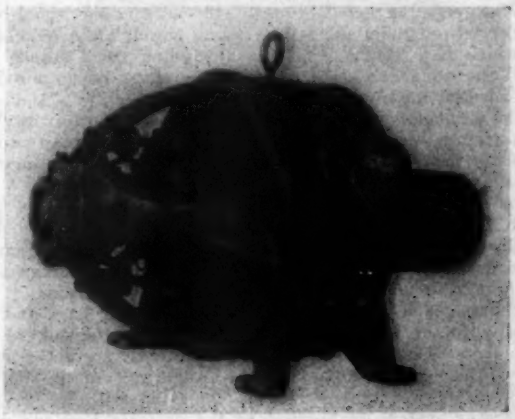
In a familiar type of winder, which has been in use for many years, the several drums are provided with cone pulleys, and belts which can be shifted on the cone pulleys to give varying relative speeds of the drum. Experience has shown that when starting to roll on the empty core, the winding drum will have to operate slightly faster than the other drums in order to wind the paper tightly but as the roll increases in diameter and weight, the traction becomes greater between the paper roll and the winding drum and an increasingly smaller difference in speed is necessary as the roll increases in size until there is practically no measurable difference in speed between the drums when the roll has acquired its maximum diameter.

In the case of the mechanical drive with cone pulleys, it is not only impractical to determine whether the winding drum is operating at exactly the correct speed with reference to the other drum to produce the correct winding conditions at any given instant but it is also difficult or impossible to shift constantly the belt on the cone pulleys, as the roll increases in diameter to thereby maintaining the correct relative speeds for proper winding conditions. With the multiple motor winder drive however, it is possible to design the motors with such characteristics that they will automatically adapt themselves to the speeds necessary to produce the most nearly ideal winding conditions.

Studies and investigations of winding paper rolls have disclosed many interesting facts with respect to this common operation, not generally known or appreciated and one of the very important factors is the maintenance of correct relative torques delivered to the several winder drums. In fact, in the last analysis what is necessary is correct relative torque rather than any specific relative speeds although the two are related, inasmuch as with varying diameters of roll it is necessary to have varying speeds in order to obtain correct relative torques.

Whether the relative torques are to remain constant throughout the winding of the roll depends upon the character of roll required and is controllable therefore, in the multiple motor drive, and can be adjusted readily if different winding characteristics are desired for different kinds of paper.

In the multiple motor winder drive, as developed by the Westinghouse Company, the system in general is similar to the well known variable voltage winder drive, which has been used for many years wherein a small variable voltage generator is provided to furnish power to the winder except that either two or four motors are used in place of one, depending upon whether a 2 drum or 4 drum winder is to be used. With this system, the several motors are connected simultaneously to the generator at very low voltage and then the voltage of the generator is gradually and smoothly increased as rapidly as desired, thereby starting up and increasing the speed of the winder as the generator voltage increases. The winder can of course, be operated as long as desired at very low inching speed and can be operated at any and all other speeds between zero and the maximum winding speed. The motors start and stop in synchronism of course, and produce the necessary and desired characteristics throughout and at all inching and winding speeds. Not



Type SK motor for individual drive of winder drum

only is this system of winder drive extremely simple and flexible and adapted to higher speeds for rapid acceleration and deceleration, with ideal winding characteristics, but it eliminates all of the countershafts, cone pulleys, clutches, gear shifts, etc., requiring much less floor space and reducing maintenance to a negligibly small minimum.

Braking Generator and Tension Regulator

Another development, which has been carried along with the multiple motor winder drive to still further improve general winding conditions is the braking generator system with automatic tension regulation. In this system a small direct current generator is coupled to the unwinding spool, this generator being driven of course, by the pull of the sheet and the output from this generator is used to assist in driving the winder, thereby recovering the energy ordinarily used up in the friction brake in producing heat.

This braking generator performs several important functions. First, and probably most important of all, is the ability through the use of the tension regulator to maintain constant tension on the sheet at all times, regardless of the diameter of the paper roll on the spool and regardless of paper speed. Perhaps the next most important feature is the elimination of the friction brake, which has always been a source of annoyance and maintenance, especially on all high speed machines. And last of all, but still of considerable value, is the recovery of the braking energy and making use of it in driving the winder.

Considerable experimenting, both in the shop and in the field, on high speed winders was necessary before a braking generator system fully perfected and thoroughly satisfactory in every respect was produced. One of the essentials of such a system is simplicity. However, all of the difficulties have been overcome and with such complete simplicity that no more effort is required on the part of the operator in the operation of such equipment than is necessary with the older style winder drive and braking equipment, with which he is entirely familiar. In fact, the multiple motor winder drive with braking generator and automatic tension control is real-

ly considerably more simple and easy to operate from the operator's standpoint than is the case with former systems of mechanical drive and friction brake.

The tension of the sheet between the unwinding spool and the winder can easily be adjusted by the operator for any desired value and will thereafter be automatically maintained at that tension and this uniformity of tension in the sheet contributes the only remaining factor necessary for the winding of the perfect roll of paper, assuming of course that the winder itself has been properly designed and equipped throughout with antifriction bearings.

Some of the detail features provided with the braking generator system are the pushbuttons, by means of which the unwinding spool can be turned over slowly or inched, by motor power to unwind sufficient paper for threading and it can then be inched back to take up surplus slack and put tension on the sheet.

Whenever, the paper breaks, the unwinding spool very quickly stops under dynamic braking through the generator, to which it is connected. The unwinding spool stands still until the winder has stopped and the sheet has again been threaded through.

The multiple motor winder drive, and generator braking systems are independent of each other and either can be used without the other, although when both are used together the maximum advantage is obtained.

To summarize, not only has the electrical art kept pace with the demand but the ideal winding conditions have been studied out years in advance and systems and equipments been designed to ideally meet the most exacting requirements in the most economical, flexible and satisfactory way.

If paper is rejected because the rolls are too hard and perhaps split, or because they are too soft or have hard and soft spots, these troubles can be permanently corrected by the use of the right kind of system and apparatus and in addition, rolls with fewer breaks can be wound up with the braking generator system on account of the uniform tension on the sheet, which can be kept low enough so the paper will have very slight tendency to break.

Ryerson Co. Announces New Appointments

The increase in the number of plants and departments of Joseph T. Ryerson & Son, Inc., together with the growing diversity of products has made necessary some changes and additions in its executive personnel.

A. M. Mueller, general manager of sales and for 30 years connected with the accounting and sales departments, becomes assistant secretary and member of the board. He is succeeded by H. B. Ressler, formerly manager of the St. Louis plant, as general manager of sales. Guy H. Rumpf, formerly manager of plant operations is now manager of the St. Louis plant. Robert C. Ross, for 26 years in the operating, service and traffic departments is advanced from general traffic manager to assistant to the president in charge of plant operations. Wm. H. Bryant with 23 years of service with the company becomes Chicago sales manager in charge of country and city store sales. Harry W. Treleaven who has been with the company for 20 years is elected assistant treasurer and will continue to be responsible for office management.

Henry W. Wendt

Henry W. Wendt, president of both the Buffalo Forge Company and Buffalo Steam Pump Company, Buffalo, New York, died after a brief illness at his home in Buffalo, June 12. Mr. Wendt was nearing his sixty-seventh birthday and had been connected with the Buffalo Forge Company for many years.

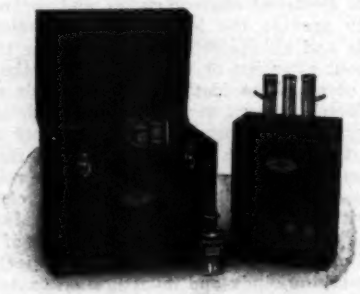
Mr. Wendt was considered an expert foundryman. He was especially interested in research and he is credited with a great many inventions of practical value. He was one of the founders of the Hydraulic Association, a member of the American Society of Heating and Ventilating Engineers and American Society of Mechanical Engineers. He had also been president of the American Foundryman's Association.

His widow, a daughter and two sons survive him.

A New Chlorine Colorimeter

A new piece of equipment, known as the LaMotte Chlorine Colorimeter, for determining small amounts of free or residual chlorine, has recently been developed by the LaMotte Chemical Products Co., Baltimore, Md. The set consists of eight permanent chlorine color standards in LaMotte "Sealed Nessler tubes" with polished tops and bottoms, representing 0.02, 0.04, 0.06, 0.08, 0.10, 0.15, 0.20 and 0.30 parts per million of chlorine respectively; three open Nessler tubes for the test sample; a 50 cc. bottle of Ortho Tolidine reagent with 0.5 cc. pipette and nipple; and a LaMotte Colorimeter for Nessler tube comparison. All this equipment is compactly arranged in a polished wooden case with a sturdy handle for carrying.

Previously, great difficulty has been experienced with standards kept in open Nessler tubes, due to contamination from cork and rubber stoppers, and both contamination and



LaMotte Chlorine Colorimeter

loss of material if the solutions are kept in bottles and poured into the tubes when determinations are made. To eliminate these difficulties all standards, including those for color, nitrogen, chlorine, iron, nitrate, etc., are put up in closed Nessler tubes with polished tops and bottoms, as recommended by F. R. Georgia (J.A.W.W. Assoc., May, 1926). The standard tubes are filled through side arms which are then sealed off, preserving the standards from contamination of any kind. The special colorimeter must be used in making determinations with these sealed standards.

In making the determination, one of the open Nessler tubes is filled to the mark (50 cc.) with the water to be tested, 0.5 cc. of the Ortho Tolidine reagent added by means of the pipette, the tube shaken to ensure thorough mixing, and placed in the middle hole of the colorimeter. Two consecutive color standards, for example, those representing 0.04 and 0.06 p.p.m. are then placed in the remaining two holes on either side of the test sample. The tops of the tubes are held toward a window or other source of daylight, and the standards changed if necessary, until the color of the reflection of the test sample in the mirrow either matches that of the reflection of one of the standards or lies between the two. If an exact match is obtained, the chlorine concentration in parts per million is read off directly from the standard with which the match is obtained. If the color lies between those of the standards on either side, the reading is taken as the average of the two. Thus if it lies between 0.04 and 0.06, it is taken as 0.05 p.p.m.

The new principle of making determinations by matching the reflections in the mirror, instead of by looking down through the tubes, makes the reading much more simple and accurate.

For larger amounts of chlorine, the LaMotte-Enslow Chlorine Comparator is recommended. This set consists of 6 permanent chlorine color standards representing 0.1, 0.2, 0.4, 0.6, 0.8 and 1.0 parts of chlorine per million respectively, made up in sealed glass ampoules; 3-15 cc. test tubes; an ampoule of distilled water; and 50 cc. of Ortho Tolidine reagent with 0.5 cc. pipette and nipple. All this equipment is contained in a polished wooden case which can be conveniently carried from place to place.

Improved Method of Installing CO_2 Meters

The Brown Instrument Company of Philadelphia has worked out an ingenious method of installing their CO_2 apparatus, working on the thermal conductivity principle. In this system of analyzing gases, the relative capacity of air to conduct heat as compared with the gas to be analyzed, is used to operate electrical indicating and recording instruments calibrated directly in per cent CO_2.

The accompanying sketch illustrates the latest method of installing this apparatus and eliminates trouble due to clogging, and gas leaks, which were heretofore experienced.

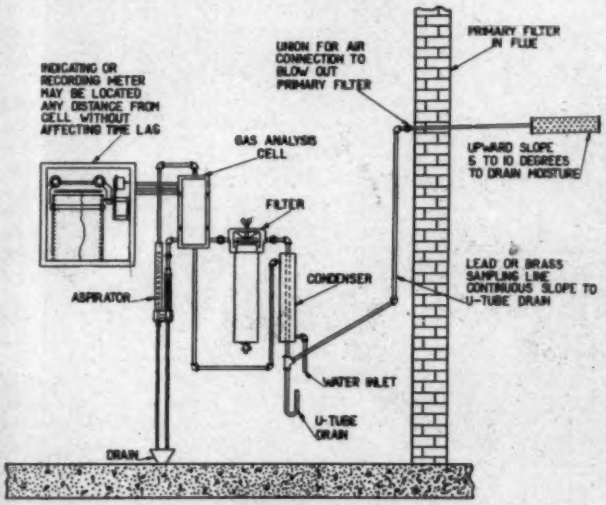
A primary filter consisting of perforated metal supporting asbestos cloth, projects into the flue or furnace. The pipe supporting this primary filter slopes downwards from the filter so moisture is drained off.

The sampling line runs directly down to the U-tube drain which collects excess moisture and acid. The gas then passes through a condenser where it is cooled to prevent any accumulation of moisture in the analysis cell.

A union connection is made at the sampling tube so the primary filter can be blown out occasionally. In practice, this blowing out is done only at comparatively infrequent intervals.

A secondary filter consisting of a container with steel wool and cotton is placed in the line in front of the cell.

The thermal conductivity cell contains four platinum filaments of comparatively heavy wire mounted in gold plated


INDICATING OR RECORDING METER MAY BE LOCATED ANY DISTANCE FROM CELL WITHOUT AFFECTING TIME LAG
UNION FOR AIR CONNECTION TO BLOW OUT PRIMARY FILTER
PRIMARY FILTER IN FLUE
GAS ANALYSIS CELL
UPWARD SLOPE 5 TO 10 DEGREES TO DRAIN MOISTURE
FILTER
CONDENSER
LEAD OR BRASS SAMPLING LINE CONTINUOUS SLOPE TO U-TUBE DRAIN
ASPIRATOR
WATER INLET
U-TUBE DRAIN
DRAIN

cells with gold lined passages. Two of the cells contain air. The other two contain gas to be analyzed, the thermal conductivity of which is to be compared to air.

From the cell, 5-wire cable runs to indicating or recording instruments calibrated directly in per cent CO_2.

This new piping arrangement, with the improved condenser, filter, and cell assembly, marks a substantial advance in the perfection of CO_2 analyzing apparatus operating on the thermal conductivity principle.

A New Reversible Grinder

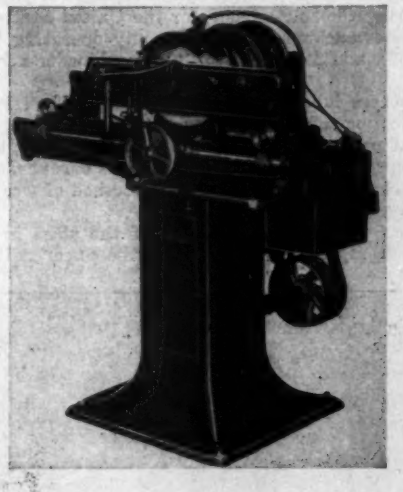
Samuel C. Rogers & Co., Buffalo, N. Y., has just come out with a new full automatic cup wheel grinder for grinding knives against the cutting edge—edge up. It can also be used for grinding knives away from the cutting edge.

This machine, known as Type "W" is of extremely simple construction. The base and column are cast in one piece, on which is mounted the bed, slide and knife table and in which the main operating parts are enclosed, insuring protection against abrasive dust.

This new grinder has three longitudinal bearings for supporting the top to insure freedom from vibration and perfectly true knife edge grinding. The back bearing is an added feature in knife grinders and is provided with an adjustable steel gib 1 inch wide for taking up possible wear.

The mitre gear, rack and pinions are cut from solid steel, eliminating noise and insuring long use. It also carries an extra large 10 inch cup wheel. The well known Rogers spring cross feed which prevents overheating of knives is retained on this grinder. Both longitudinal and cross feeding are full automatic, positive acting worms and gears being used in such a way as to stop the feeding at any desired point.

In grinding knives with the cutting edge up, the delicate edge is always in plain view of the operator, and, as is



claimed by many, the heat generated by the contact of the grinding wheel with the knife is directed or carries toward the body of the knife and away from the thin delicate cutting edge. This method of grinding knives is now preferred by many operators and no doubt has its advantages.

The travel of the table is at the rate of about 40 feet per minute and is adjustable to suit the length of the knife being ground. To make the machine still more rigid, supports for both ends of the bed are furnished for the 44 inch and 54 inch sizes. It is also made in three smaller sizes, 26 inch and 32 inch, and 38 inch. All sizes are equipped with a large 10 inch cup wheel which has a surface speed of about 3300 feet per minute.

This new product of the Rogers Co. is furnished with arbor mounted on ball bearings or sleeve bearings and also with 1 h.p. General Electric built in motor, starter, etc. It contains all other up to date features such as water attachment with pump, stop cock, etc., for regulating the flow of water to the grinding contact, index for gauging the degree of bevel of the knives, etc.

By bringing out this new up to date grinder the Rogers Co. is keeping abreast of the times and giving to their customers the benefit of their long and successful experience in building automatic knife grinders.

Chemipulp Process, Inc. Opens Offices

Chemipulp Process, Inc. is prepared to offer to the Chemical manufacturers a unique service in that the organization consists of highly specialized men who are trained in putting into operation special chemical processes which it controls as well as make operating surveys and careful estimates covering reduction in manufacturing costs.

The following plants are now successfully operating Chemipulp processes:

Algonquin Paper Co., Ogensburg, N. Y.; Anglo-Canadian Pulp and Paper Co., Limoilou, Que.; Nekoosa-Edwards Paper Co., Port Edwards, Wis.; Hoberg Paper and Fibre Co., Green Bay, Wis.; St. Lawrence Paper Mills, Three Rivers, Que.

In addition to the above plants which are no operating the Chemipulp processes, contracts have been closed for the installation of these processes in the plants of the Abitibi Power and Paper Company and the Restigouche Company's Ltd., new bleached pulp mill at Atholl, New Brunswick.

The Jagenberg Roll Wrapping Machine

In January of this year, one of the trade journals published an article regarding the granting of patent rights on this continent to the Jagenberg-Werke, Akt.-Ges., of Dusseldorf, Germany, covering its automatic roll wrapping machines. Mr. Ogden Brower, Jr., president of Gibbs-Brower Co., Inc., 261 Broadway, New York City, paper and pulp mill brokers and dealers in new and used paper and pulp mill machinery, immediately communicated with the Jagenberg-Werke people which resulted in his taking a trip to Germany and securing the sole agency for the United States and Canada. These machines are successfully operating in German paper mills and an outline of the machine is herewith presented:

The process is known as the Jagenberg Shell Packing for the Protection of Mill Rolls, and the advantages of this method of packing are: first, that damage during transportation is impossible; second, this method is cheaper, considering the results obtained, than any other method of wrapping rolls of paper.

Users of paper often complain of the state in which the rolls arrive after the journey from the paper mill. Not only are the outer layers wasted, but the ends of the rolls are also considerably damaged. These faults are attributed to lack of care on the part of the papermaker, although the real causes are insufficient and unsuitable packing and bad handling during transit. The only way to avoid this condition and the disastrous results of same is to pack the rolls in such a way that even the most careless and rough transportation cannot cause damage. The new Jagenberg Paper Roll Wrapping Machines protect mill rolls in the best possible manner at lowest cost.

A solid shell consisting of a number of layers of an ordinary cheap grade of wrapping paper is welded together under heavy pressure with silicate of soda and is wound around the body of the roll and folded over and up at the ends. According to size, one hundred to two hundred rolls, equal to 70 to 100 tons and up of paper, can be wrapped on one of these machines in an eight-hour day, requiring the attendance of two or three persons only.

Based on a roll of high-grade American magazine paper in rolls 30 inches in diameter and 60 inches in width, and weighing approximately 1500 pounds to the roll, the Jagenberg Type RRPG, or large size roll wrapping machine, can accomplish the following results:

Occupying an overall floor space of 15 ft. x 18 ft., compared with the expanse of floor space necessary for the present method of wrapping in our paper mills, three operators can wrap 200 of these rolls in eight hours, or a total of 150 tons of paper. This is figuring on a welded paper shell on each roll, approximately ⅛ inch in thickness.

The number of wraps of paper and the amount of silicate of soda applied, are absolutely under the control of the operators at all times. This surely constitutes a fair saving of time, labor and costs, not only compared with crate packing, but with all other methods of packing employed up to now, as the operator can control absolutely the number of wraps and the amount of silicate of soda used in wrapping the rolls.

The official surveyor at one of the largest continental ports, after careful comparison and investigation, expressed the opinion that Jagenberg Shell-Packed Mill Rolls are better able to stand the strain of truck, rail and sea transport than ordinarily packed or crated packed rolls.

The Jagenberg Roll Wrapping Machine is made in three standard sizes, for large, medium and small mill rolls. The Type RRPG is manufactured to handle rolls up to 64 inches and 84 inches in width, and up to 40 inches in diameter. Machines of this type—or, in fact, of any of the other types—can be furnished for any width rolls desired, according to requirements, on special order.

Retogross or Type RRPG—Large size roll wrapping machine

Working Methods—The packing station is arranged at floor level. Rolls can be placed on the two carrying drums without exertion. Driven feed rollers bring the wrapping paper forward, which is wound around the roll under heavy pressure. The first layers are left uncoated until the coating station is brought into action by means of a hand lever. Any number of layers can be wound; 3 to 4 are recommended for inland transport; 6 for oversea shipment. The packing paper should be 24 inches wider than the roll itself, so that 12 inches on either side can be folded over the ends of the roll. These should be previously protected by the insertion of cardboard discs. A paper disc is afterwards placed over the end folds of the wrapper. A wire to facilitate easy opening of the wrapper is inserted between the first two layers. The roll is then automatically lifted off the drums

and removed to the pressure station, where it remains under mechanical or hydraulic pressure until the next roll takes its place.

Two auxiliary machines for end covers are required; one a paper and board disc cutting machine, known as their Type RS for cutting discs up to 48 inches in diameter, and the other a sheet gluing machine, known as their Type Z 11, with a working width up to 40 inches in diameter. The latter machine, of course, is used to automatically put the glue on the

Loading Jagenberg shell-packed rolls in Hamburg Harbor

discs that are pasted on the ends of the rolls, at the last process under hydraulic pressure.

The medium size machine is known as the Type RRPM with patented See-Saw Paper Lift and can be easily handled by one man or by two girls, as it is so constructed that no lifting is required, or heavy work, in handling the rolls. The method of packing is similar to that already described in connection with the Type RRPG machine with the exception that the roll of packing paper and the coating station are arranged underneath the machine. The carrying drums driven from the main shaft, are in a convenient position for the manipulation of the end folds.

To facilitate the lifting of the rolls, a See-Saw Balance has been provided, which is a very ingenious affair, making the roll as it leaves the machine, automatically lift from the floor

Unloading same rolls at Rio de Janeiro (Note perfect condition of the rolls)

into position on the front end of the machine, the next roll ready for wrapping.

The small machine, Type RRPK, operates like the others only it is a one-man or one-boy proposition, and is especially adapted for shell packing applied to rolls containing narrow coils, such as are wrapped for shipping by the paper mills and paper jobbers, as they come from the small slitting and rewinding machines—such as ribbon tape, adding machine rolls, ticker tape, etc.

The Jagenberg-Werke have a great many of these machines in operation in Germany and in all other paper manufacturing countries of Europe including England and Scotland. There are at present seventy-one of the large size, Type RRPG, machines in use. In fact, the Jagenberg Roll Wrapping Machines have been adopted generally in the Continental paper mills, and it is a machine that should be of great interest and service in the paper mills on this side of the water.

New Thermo Hydraulic Feed Water Regulator

A thermo hydraulic feed water regulator which embodies many new and improved features has just been announced by the Bailey Meter Company of Cleveland, Ohio.

Figure 1 shows the regulating valve used in this new Bailey Thermo Hydraulic Regulator, and from this figure it will be noted that the valve is tight seating, has scientifically designed V-ports and is fully balanced. In operation these features result in freedom from danger of flooding boilers at low rates of steaming or when on bank; smooth continuous feeding of boilers while in normal operation; and a positive, non-chattering action of the regulating valve.

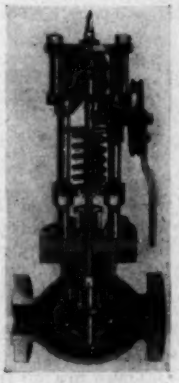


Figure 1

If seats must be reground or replaced, the entire valve cage can be removed from the Bailey Regulating Valve without removing the valve body from the line. The old cage, or a new one, can be replaced in the valve body with the assurance that all moving parts will be in perfect alignment, since the entire balanced valve mechanism is contained within the cage as shown in Fig. 2. This method of construction eliminates the necessity of removing the entire valve body and machining the seat after it has been installed, an operation that is necessary in certain types of regulating valves. Another interesting feature in this valve to be noted from Fig. 2 is the recessed rings in the valve cage immediately below the valve seat. The purpose of these recessed rings is to prevent cutting of seats and valve discs by wiring drawing at the tips of the V-ports. By means of these rings, the flow is evenly distributed so that equal wear occurs on all parts of the seat when the valve is operating near the closed position.

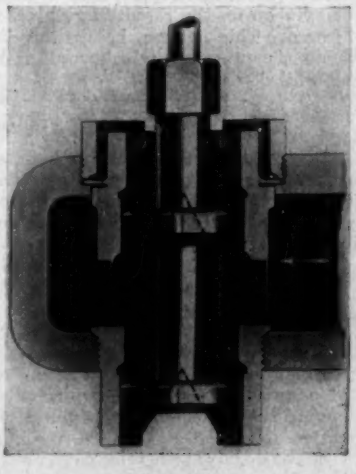


Figure 2

A lever and cam is provided on the regulating valve so that in case it ever becomes necessary to regulate feed water by hand the regulating valve can be quickly opened by a half turn of the by-pass lever. For installations where the valve will be located at a considerable distance above the operating floor, a sheave wheel is provided on the valve so that it can be by-passed by means of a cable operated from the operating floor.

New features which are incorporated in the Bailey Thermo Hydraulic Generator, which is located at the boiler water level, are a cold water storage leg, a condensate by-pass and a vacuum seal. The cold water storage leg, together with a large fin area on the generator tube assures rapid condensation of steam in the annular space between the inner and outer generator tubes, which in turn results in positive clos-

ing of the regulating valve as the boiler water level tends to rise. Condensate which forms in the connecting piping between the generator and the boiler drum is returned to the boiler by means of the condensate by-pass. This prevents erratic and false operation of the regulating valve which

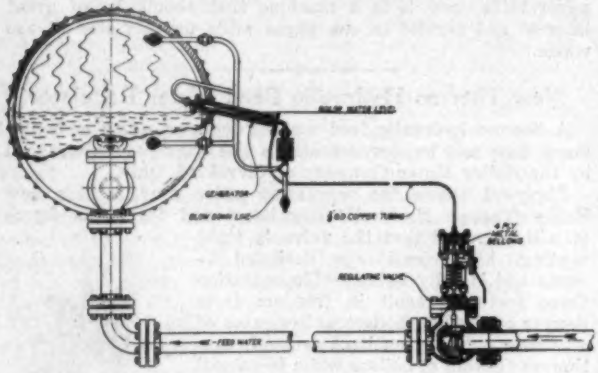


Figure 3

would be caused if the condensate were allowed to drain back to the boiler through the generator. The vacuum seal causes instantaneous closing of the regulating valve in case the boiler water level ever exceeds the upper limit of variation allowed by the generator.

Bailey Thermo Hydraulic Feed Water Regulators will be furnished in all pressure standards up to and including 1350 pounds.

There are no limitations as to where the regulating valve must be installed in the feed line, since only a hydraulic connection is necessary between the sylphon on the regulating valve and the annular space between the tubes of the generator. This connection is made by ⅜" O. D. soft annealed copper tubing as is shown in Fig. 3. As will be noted from Fig. 3, the annular space between the outer and inner generator tubes, the copper tubing and the 4-ply metal bellows or sylphon on the regulating valve, form an all-metal closed system. This system, because of its metal-to-metal ground joints is practically leakproof and seldom, if ever, must be refilled.

Welded Digesters

During the Chemical Exposition held in New York recently, an opportunity was afforded pulp and paper men to learn something about the development of electric welding in its application to the manufacture of soda and sulphate pulp digesters.

In a talk by T. McLean Jasper, director of research of the A. O. Smith Corporation, Milwaukee, Wis., he gave a general picture of the development of welding in the various industries, with special application to vessels that had been in service continuously for several years under the most severe working conditions. His talk centered around the description of a number of pictures projected on a screen, the pictures having been selected for the purpose of illustrating the application of welded digesters in the paper industry.

Three general principles were involved, said he, in the building of pressure vessels—namely, materials, design, and methods of fabrication.

The steel selected must have high strength, great resistance to corrosion and sufficient ductility so that fabrication could be carried out in a satisfactory and safe manner.

As to design, this involved the construction of containers as strong in every part as in the main cylinder. Many types of construction were in general use in which the economical and safe use of materials had not been fully considered.

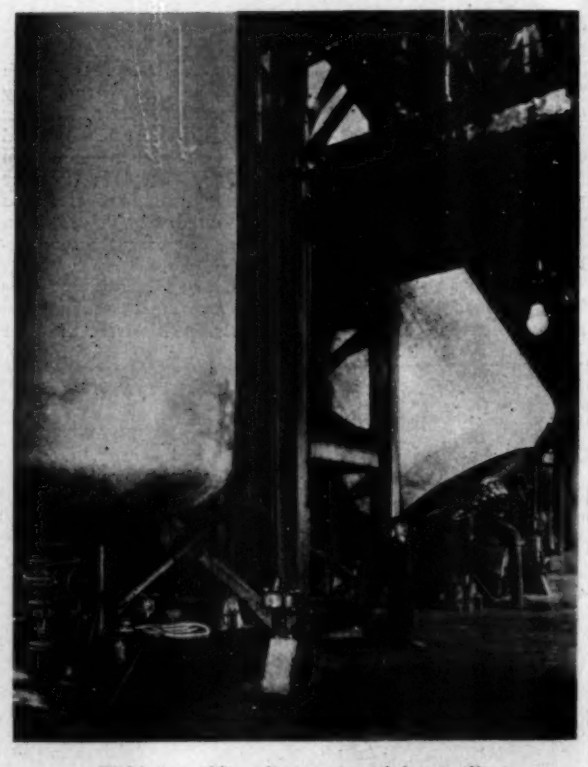
The third principle, that of methods of fabrication, excludes damage to materials during construction and provides that the strength of the welded vessel shall not be impaired when it is put into service.

Mr. Jasper said that the paper industry had not been supplied to any great extent with welded digesters by the firm with which he is connected. However he showed in one of the first slides projected one of the welded large tumbling digesters now in use by a progressive sulphate mill in Wisconsin, the mill of the Thilmany Pulp and Paper Company. This represented one of two such digesters which had been built to take the place of obsolete equipment and to increase the capacity of the plant without increasing the plant space.

One of the pictures thrown on the screen showed the tumbling type of digester in operation. These digesters are so designed that their unusually great weight will not disturb the alignment of the trunnions. Views were also shown of the Smith automatic welding machines in operation, as well as specimens of plates cut from the center containing the welded section, which demonstrated the great ductility of the resulting weld, as well as the fact that the weld was stronger than the plate, besides giving proof that the process of welding did not damage the metal immediately adjacent to the weld.

An interesting point made by the speaker related to the design of the digester. Alluding to a description of tests made he said these indicated that all vessel heads should be ellipsoidal in shape, the ellipse having the major axis equal to the diameter of the vessed, and the minor axis equal to half of this value. Mr. Jasper said that this produced a head in which the stresses would not be greater than the girth stresses in the main cylinder.

One of the pictures showed a very large electric furnace under automatic control into which a 12 ft. x 68 ft. vessel



Welded tumbling digester in sulphate mill

was being introduced on a special car. This was said to be the largest electric furnace which had ever been constructed.

Other slides showed the result of tests to determine what deterioration if any had occurred in the welds. Mr. Jasper said that adequate testing of digesters after building was an important requirement and he gave details of these tests.

Articles of incorporation have been filed for the Badger Gummed Tape Co., at Racine, Wis. Capital stock consists of 150 shares at $100 each, and 1,200 shares of common stock at no par value. Incorporators are N. Young, G. Liedich, and H. Wilson.

ADVERTIS NG PAGES REMOVED

Supply and Use of Rhineland Pulverized Brown Coal

THE sales territory of the brown coal district of the Rhineland required in the year 1927-1928 about 112,000 tons of brown coal dust, of which 36,000 tons was pulverized after

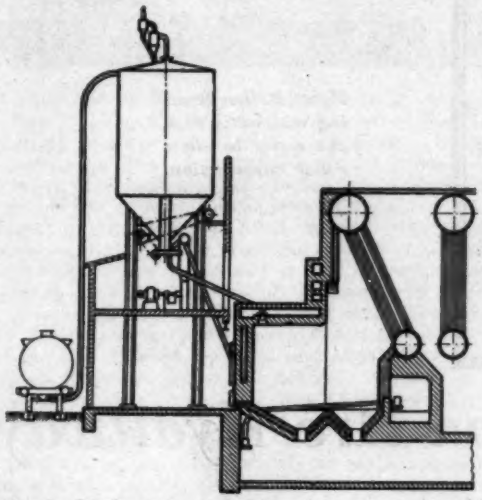


Fig. 2—Discharging powdered coal to storage bin and to furnace

having been dried by fire gases and of which 76,000 tons was obtained directly or indirectly from the dust precipitating plants of the briquetting works. This pulverized fuel was shipped to the consumers in a total of 91 special cars, mostly of the types shown in Figure 1, holding from 15 to 28 tons per car. These cars are filled and unloaded by means of compressed air. In discharging, the compressed air is applied from the top, and also from below through the discharge funnel to loosen up the coal dust. With a discharge hose of 4-inch diameter, the 27 ton car load can be discharged in 25 minutes, of which 6 minutes is required for charging the car tank with air to a pressure of 29 lb. gauge. The consumption of compressed air is about 285 cu. ft. per metric ton of dust conveyed. The coal dust is stored, at the shipper's plant and also at the consumers' plants, in iron bins which may be closed off air-tight. A spiral conveyor or bucket wheel is provided at the base of the bin and there are also activating nozzles to assure a uniform feed of the dust to the discharge. Conveying by pressure is becoming preferable to conveying by suction air and the conveying may be done satisfactorily over distances to 1640 ft. and differences in altitude of 82 ft. sharp turns, bents, rectangular up and down turns of the hose are desirable, for they cause an eddy and consequently delay the separation of the air and dust mixture in the hose when conveying over long distances. The compressed air should be dry and oil-free. The discharge of a coal dust car into the storage bin and the supply of the coal dust from the bin to the boiler plant is illustrated in Fig. 2. This installation is a verticle tube boiler which has been rebuilt for pulverized fuel firing and is provided with a cooling grate.

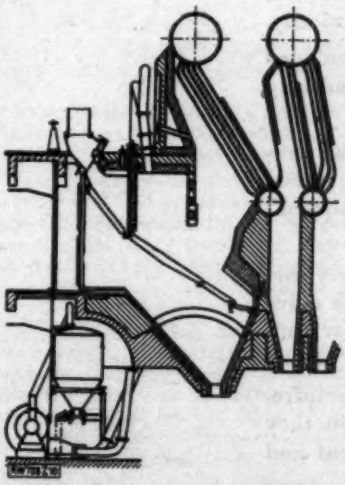


Fig. 3—Supplementary powdered coal firing installed with stationary stair step grate for raw brown coal

Of interest is also the installation of equipment for supplementary pulverized brown coal firing as shown in Figure 3. In this case the coal dust bin is located beneath the boiler room floor so that a double bin in the boiler room is not required and the bin beneath the floor is thus easily accessible.

John F. Carroll Honored

On the occasion of John F. Carroll leaving Piercefield, N. Y., where he was for the past three years manager of the Piercefield mill of the International Paper Company, he was honored at a meeting of the Rotary Club with the presentation of a rose and a Rotary charm.

The presiding officer, Robert E. Minnich, expressed the regret of the club at losing a valued member who had a record of 100 per cent attendance and added that Rotary had been the better for his continued and faithful presence. In making the presentation, he expressed the hope that Mr. Carroll would enjoy the possession of the gift and that wherever he might locate he would prosper and continue to practice the Rotary motto, "Service Above Self".

American Hoist & Derrick Opens New Western Office

The American Hoist & Derrick Co. of St. Paul announces the opening of a branch office and warehouse in Los Angeles, Calif. The office and warehouse is located at 337 So. Anderson St. This latest move is designed to give the users of American equipment in Southern California the best possible service in repairs and new equipment.

W. H. Lummus, who has represented the American Hoist & Derrick Co. on the West Coast for many years is in charge of the Los Angeles office.

W. M. Cusac, formerly with the McMyler Interstate Company of Cleveland, has been appointed to the Chicago sales force of the American Hoist & Derrick Co.

The Permutit Company, New York City, has opened an office in Spartanburg, S. C., in charge of R. V. Irwin, formerly manager of the Chattanooga office.

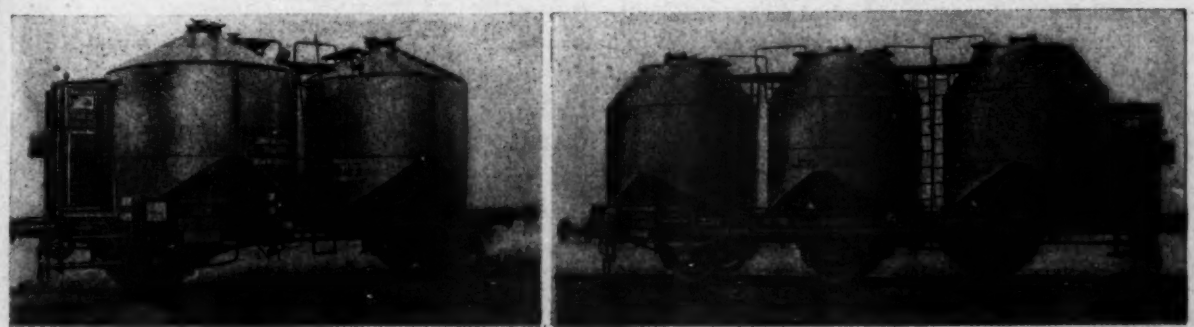
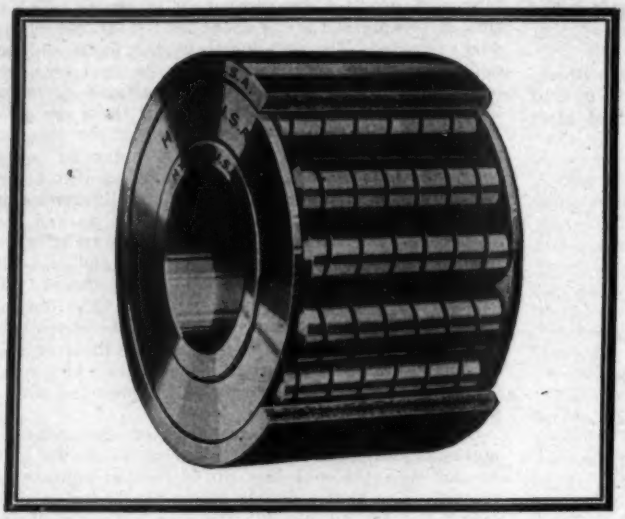


Fig. 1—Powdered coal shipping cars



Hyatt Roller Bearing with outer race cut away to show roller construction.

All Ways of Production Are Hyattways

THE scene is a busy mill. Various departments at their various tasks. Each operation dependent upon the one which precedes it.

Barking drums, hogs, jordans, fourdriniers, winders, and calenders... working steadily, smoothly, and economically.

In all this equipment Hyatt Roller Bearings are universally employed to minimize friction, save power, and help produce greater tonnage at less cost.

All these machines operate more effortlessly ... with free-running Hyatts. Ask some of the users of Hyattized equipment what the familiar phrase "Hyatt Equipped" means.

They will tell you that Hyattized machines of every sort ... and the Hyattized motors and shafting which drive them ... give assurance of longer hours with fewer shut-downs ... and longer life with less maintenance.

Hyatt Roller Bearings require lubrication only infrequently, and because of their sturdy construction they have the capacity to take unrelenting punishment and protect the equipment from shock and friction.

Which accounts for the fact that for thirty-eight years production experts have chosen the Hyattway as the most efficient and most economical way to transmit power, to operate machinery at maximum profit, and to help move materials along the highways of production.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

The Month at Washington

CONGRESS on Vacation—With the Senate Subcommittee busy holding tariff hearings, the rest of the Congressional satelites are enjoying a vacation. In the first two months of the extraordinary session, Congress dealt with many important matters of legislation, particularly so in view of the effort made to restrict action to the major problems of the tariff and farm relief, having enacted 17 public laws and 16 public resolutions, while 4,185 bills and 183 resolutions were introduced in the House and the Senate passed 17 bills and adopted 16 concurrent resolutions. The American Pulp and Paper Association has been very active before the Senate Finance Committee in its tariff hearings. The bracket on India and bible paper, on which a duty of 4¢ per pound and 15 per cent ad valorem is collected, was asked to be changed from 10 to 18 pounds to the ream to 10 to 22 pounds. The Nashua Gummed and Coated Paper Co. asked for changes in par. 1405 relating to coated and uncoated papers, so as clearly to designate decorative paper, and also asking for a 10 per cent ad valorem increase over the existing specific rate of 4½¢ per pound granted by the House. The Hurlbut Paper Co. protested against reductions made by the House on sensitized paper employed in photography and unsensitized basic paper to be sensitized for photographic use.

A bill was introduced in the House just before adjournment (H. R. 3830) to regulate bills of lading for the carriage of goods by sea to or from the ports of the United States in foreign trade or a uniform bill of lading act for ocean commerce.

A joint resolution introduced in the House (H. J. Res. 87) would investigate the unemployment problem under the joint jurisdiction of the Departments of Commerce and Labor.

Bureau of Standards Investigations—Development of a standard method of measuring the bulk paper with uniform terms for expressing value was announced by the Bureau of Standards. Paper varies in character from light, fluffy material to dense, compact sheets, and the degree of fluffiness is known in the paper industry as bulk, which property is of interest chiefly in connection with bound volumes. It is desired to have some books light but thick, and others as thin as possible for a given weight. The property of bulk has a great deal to do with the character of a book in this respect. Owing to the fact that there is no standard method or uniformity of procedure, in the measurement of bulk, the Bureau has recently made a study of the different means of measuring this property of paper. It was found that the amount of pressure used when measuring the thickness of paper is the chief cause of disagreement by the different methods of measurement. Several types of paper were studied in connection with bulk measurement and they were found to differ considerably in compressibility and response to the different means of measurement. After a thorough study had been made it was found possible to choose conditions of operation of the most widely used bulk measuring devices which would bring them into substantial agreement. As a result, there were recommended a standard procedure for measuring bulk and a standard method of expressing the results. The recommendations are given in detail in a forthcoming issue of the Bureau's Standards Journal of Research.

The Bureau is seeking additional funds for an investigation of the properties of lithographic papers in order to make possible the increased speed in printing of which the offset process is capable. Economies in printing can be effected by developing the offset process through the standardization of lithographic papers, and from 3,600 to 4,200 sheets an hour may be printed by this process, but 25 per cent of the possible increase is now lost by paper trouble. It is claimed that if paper containing the right properties were devised, that the number of impressions per hour by the offset process could be greatly increased.

Paper Stiffness—The comparative value of potato, wheat, corn and rice starches for stiffening fabrics has been given intensive study by the Bureau of Home Economics. A quantitative method and apparatus for measuring the stiffness of sized fabrics has also been devised. Heretofore, only qualitative methods of showing differences in fabric stiffness had been developed, and oftentimes the stiffness was indicated as part of the feel, handle or some such vague term common in mill practice. The new method marks an advance in the scientific study of fabric sizing. It is predicted the manufacturers of paper and other commodities will find this method of equal value in measuring accurately the stiffness of their commodities. Copies of a publication on Stiffness in Fabrics, Technical Bulletin 108-T, may be obtained from the Bureau without charge.

Recent Customs Decisions—Writing paper in the form of pads and envelopes made from the same paper, classified at 3¢ per pound and 15 per cent ad valorem plus 10 per cent under par. 1307, tariff act of 1922, and the envelopes assessed with 10 per cent additional duty under par. 1308, were claimed not to be decorated and therefore not subject to 10 per cent under par. 1307, and that the envelopes were not subject to additional duty. The U. S. Customs Court in a recent decision (No. 230790-G) sustained the protest as to the envelopes, but the writing paper had a watermark of a geometrical design which was held to add to the attractiveness of the paper, and therefore constituting a decoration within the intent of the provisions in par. 1307.

Merchandise classified as wrapping paper at 30 per cent ad valoreum under par. 1309 was claimed entitled to free duty as standard newsprint paper under par. 1672, but on the authority of a decision of the U. S. Customs Court of Appeals (T. D. 43187), the Customs Court overruled the protests (No. 123698-G-8199).

Merchandise classified as wrapping paper at 30 per cent was claimed dutiable as cardboard at 10 per cent under par. 1302, but the Customs Court found nothing in the record to substantiate the claim except the importer's contention that the merchandise exceeded nine one-thousandths of an inch in thickness, and so the protest was overruled (No. 142975-G).

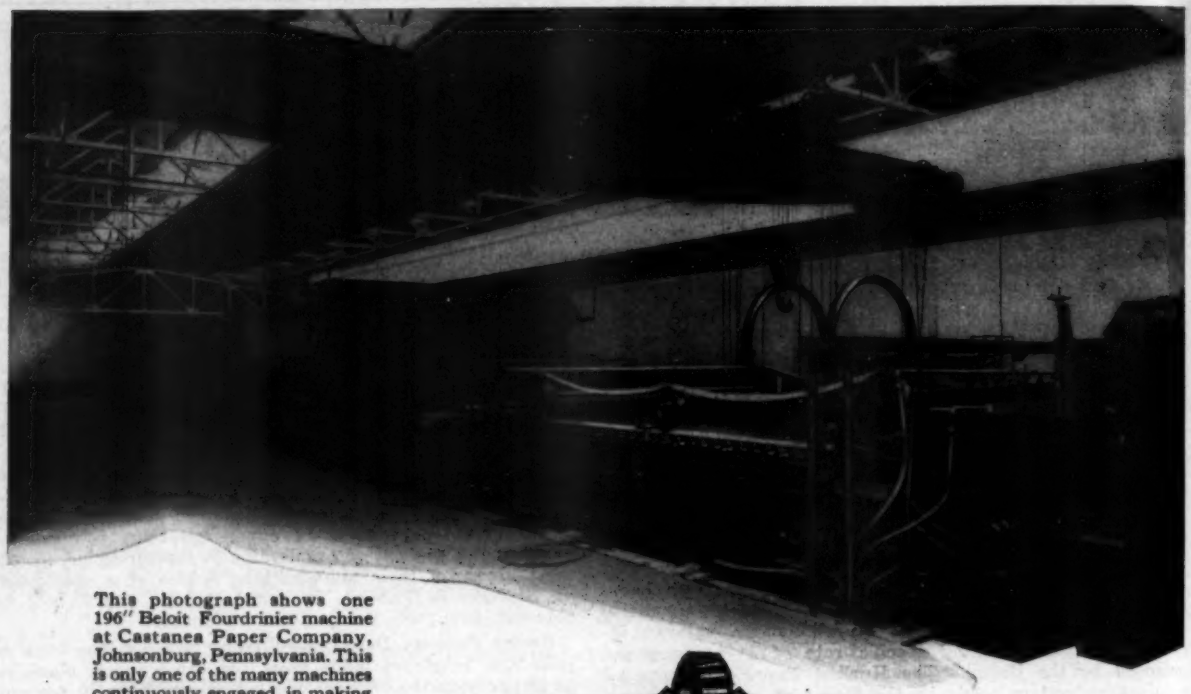
Interstate Commerce Rulings—A finding by the Interstate Commerce Commission that freight rates on newsprint paper in carloads from points in Minn. and Canada to points in N. Dak. are not unreasonable is recommended in a report just made public (No. 21066).

In Continental Paper & Bag Mills Corp. vs. Atlantic City R. R. (No. 19517), rates charged on paper bags in straight carloads and in mixed carloads with wrapping paper, from Rumford, Me., to Newark, N. J., Philadelphia and Harrisburg, Pa., were found applicable and not unreasonable or unduly prejudiced and the complaint was dismissed.

In United Paperboard Co. vs. B. & O. R. R. (No. 19684), the Commission finds that rates on imported wood pulp, in carloads, from Baltimore and New York to Wabash, Ind., were not unreasonable, unjustly discriminatory or unduly prejudicial, and the complainant now showing itself to have been damaged by the fourth-section violations, the complaint was also dismissed.

Rates on mixed-carload shipments of pulpboard boxes, not paper, from Neenah-Menasha, Wis., to Joplin, Mo., were corrugated, knocked down flat, and printed waxed wrapping found not unreasonable in another decision (Menasha Printing and Carton Co., No. 20653), the complaint was dismissed.

Recent Court Decisions—The annual obligation incurred



This photograph shows one 196" Beloit Fourdrinier machine at Castanea Paper Company, Johnsonburg, Pennsylvania. This is only one of the many machines continuously engaged in making Postex, the paper upon which the Saturday Evening Post is printed.

TIMKEN BEARING EQUIPPED

Greater Economy for the Paper Industry

Paper machine bearing matters are impressively settled by the Beloit Iron Works, Beloit, Wis. Timken Bearings are used on breast rolls, table rolls, paper rolls, wire rolls, spring rolls, press felt rolls, felt dryers, felt guide on the presses and felt guide on the dryers, and in some cases paper dryers, press rolls, calenders and drives.

Quicker starting, smoother running and desirable power economy are the first indications of Timken load ability and Timken rigidity. And these Timken advantages are paralleled by Timken endurance—the one indisputable proof that Timkens are eliminating friction and wear in Timken-equipped machines.

Every branch of paper making knows Timken economies. From logging to delivering rolls of paper Timkens are cutting costs and adding endurance.

Modern production demands include demands for Timken Bearings as the utmost protection against maintenance, depreciation, inaccuracy and underproduction. The source of complete protection is Timken self-contained full radial-thrust capacity, the result of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken-made steel.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

in a merger of companies was held to be a business expense in a recent decision of the U. S. Circuit Court of Appeals (2d Cir.), in the case of Geo. LaMonte & Son vs. Commissioner of Internal Revenue, and a deduction was permitted from income tax returns for a percentage of the profits paid to two individuals under consolidation contracts. The Commissioner and the Board of Tax Appeals had held that the payment was comparable to a dividend and not deductible, but the agreement was to pay the percentage before any other dividends of the corporation were distributed, and so their findings were overruled.

Expenses incurred in holding an annual picnic for employees were held to be an ordinary and necessary business expense in conducting a business, according to a recent decision of the U. S. Board of Tax Appeals (Docket Nos. 15850 and 18935).

A complete outline of how to handle reserve for bad debts as related to the income tax was recently completed in four parts in the Internal Revenue News, as compiled by James E. Lea of the Rules and Regulations Section, a copy of which may be had upon application to the Internal Revenue Bureau.

Wholesale Prices—The recent downward trend of wholesale prices continued through June, according to statistics compiled by the Department of Labor, a decrease of 1 per cent, and with 1926 as the basis of 100, we find the following changes:

	June 1928	May 1929	June 1929	Purchasing power of the dollar in June, 1929
Paper and pulp	89.8	89.8	88.3	113.3

Employment and Payrolls—Employment increased 0.2 per cent in June as compared with May and payroll totals increased 0.7 per cent according to a report just issued by the Bureau of Labor Statistics, and with 1926 as the monthly average of 100, we find the following changes:

	Employment June 1929			Pay-roll totals June 1929		
	1928	May	June	1928	May	June
Paper and printing	98.2	99.6	99.9	100.6	104.9	105.8
Paper and pulp	93.5	95.3	95.0	94.0	98.4	98.1
Paper boxes	90.4	92.9	92.5	95.2	100.7	100.3

Recent Postal Matters—The Post Office Department in an effort to popularize the use of business reply cards and envelopes has modified existing instructions by extending this postal facility to the air-mail service Business reply cards and letters in business reply envelopes otherwise conforming to the provisions of Section 384½, Postal Laws and Regulations, may be prepared for return via air mail, the regular air-mail rate plus 1 cent additional to be collected upon delivery. Such mail matter must bear in addition to the indicia prescribed for business reply cards and envelopes, the words "Via Air Mail" printed in bold letters on the right portion of the address side above the name of the addressee and adjacent to the heavy short lines along the top.

The Department has just issued an order by which the collect-on-delivery service is extended to both registered and unregistered sealed domestic mail of the first class effective July 1st. Heretofore the collect-on-delivery service was applicable to mail matter only of the thrid and fourth classes. This enables mailers to use first class mails to obtain prompt settlement of accounts.

Air Mail for the South and Southwest—The Interdepartmental Committee on Airways of the Post Office Department has been holding extensive hearings recently on the proposed establishment of air mail service in various sections of the South and Southwest and an extensive air mail program for this territory. It was pointed out at the hearings that this section of the country is more interested in airways than in any one subject, and it was predicted that before it is realized, practically all letter mail will be carried by air. The hearings because of their large attendance and the great interest displayed shows that we are becoming air-minded. Two particular things stand out in the establishment of air mail service in this territory, and the first is that business will be developed which will react in the amount of air mail poundage, and the second is the establishment of closer mail connections between the north and east with raw material and producing sections of the southwest.

Marketing Methods—Developments in business methods of marketing in the United States were recently studied by the President's Employment Conference, showing that the utilization of radio broadcasting for advertising purposes has been one of the strongest influences toward the rapid expansion of the radio industry from 1922 to 1928. The decreasing volume of advance orders and the improvement of transporation, together with the exercise of merchandising ingenuity by manufacturers and merchants, have brought profound changes in answer to shifting tastes and increased buying power of the American people. It is pointed out in this report, that shifts which have made some industries prosperous, have brought depression to others. Changes in demand, changes in retail trading areas, hand-to-mouth buying, changes in distribution, co-operative marketing, installment selling, and advertising have been under exhaustive study for more than a year by this committee, which has just published a complete report on the subject.

Five-day Week in Industry—The five-day week is increasing in American industry according to a recent survey by the Bureau of Labor Statistics, including the men's clothing industry, the automobile industry, etc.

Radiotelegraph—Radiotelegraph service to the general public will be offered in the near future in fourteen strategic cities it was recently announced in a statement of the Federal Radio Commission on application of the Radio Corporation of America. It is hoped to extend the system to a full list of twenty-nine cities as soon as the Commission grants additional wavelengths, with a view to carrying on an efficient domestic radio service. Stations will be located at New York, Chicago, San Francisco, Los Angeles, Seattle, Denver, New Orleans, Kansas City, Detroit, Cincinnati, Cleveland, St. Louis, Boston and Washington which will hook up with world-wide wireless radiating from New York and San Francisco to thirty-two foreign countries.

Holding Companies Incorporate in Switzerland—Switzerland is a favorite land for the location of holding companies, especially for international companies with ramified interests extending pretty well throughout Europe, says the Department of Commerce. The central position assures neutrality in war time, excellent communications by air and rail for the convenience of directors, as well as excellent hotel and other accommodations.

Federal Trade Rulings—The Federal Trade Commission has reconsidered and rescinded the so-called "clandestine" trade practice conference rule which was adopted last October, holding that resolutions expressing the intent of the industry when approved by the Commission, when violated should be deemed unfair methods of competition. It is conceded that what constitutes "unfair method of competition" is a question of law to be finally decided by the court of last resort and that units of an industry cannot by conference resolutions make a practice unlawful which is not so under the Federal statute as interpreted by the court, nor can it make a practice unlawful which is not so under the court's interpretation.

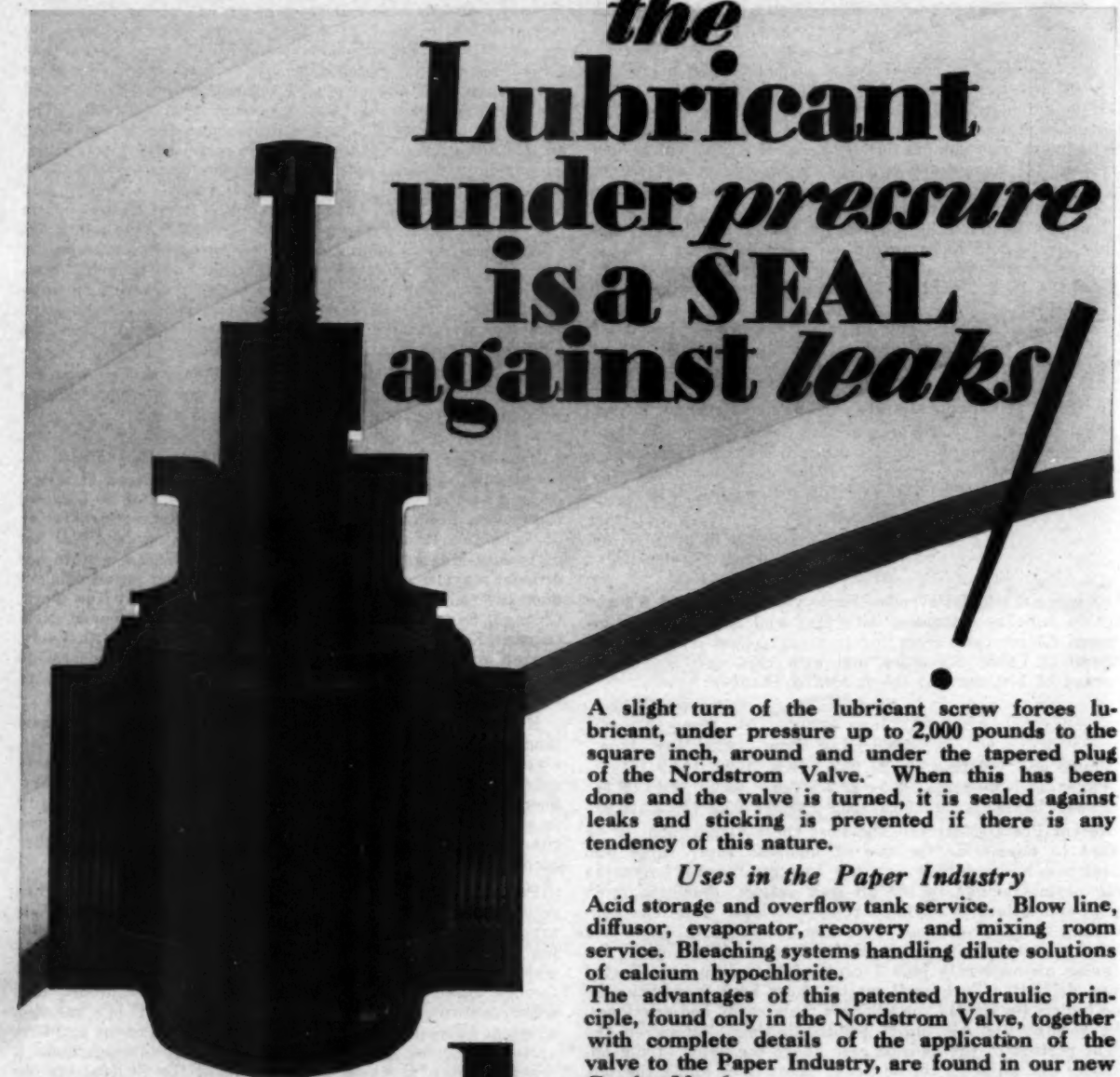
The kraft paper industry recently met in Washington for a trade practice conference on subjects including price discriminations, sales below cost, inducing breach of contract, publication of fictitious prices, false reports of capacity, sales, orders and shipments. Kraft paper is made of kraft or sulphate pulp and is in general use as wrapping paper in this country. It is also manufactured into finished articles such as bags, food containers, envelopes and sealing tape.

The second trade practice conference for the waxed paper industry will be held in the near future to revise some of the rules laid down at the first conference, to eliminate alleged misunderstandings or confusion, and the baking industry has been invited to attend so that their views may also be known.

Recent Publications—"Revised Regulations Concerning Reply Cards and Envelopes", is the title of a publication just issued by the Post Office Department bringing up to date all changes and modifications in the original law and regulations.

"Pulpwood Consumption and Wood-Pulp Production" is the title of a report just issued by the Bureau of the Census, showing the total consumption of pulpwood in 1928 amounted to 7,160,100 cords, or an increase of 6.1 per cent over 1927.

the Lubricant under *pressure* is a SEAL against *leaks*



A slight turn of the lubricant screw forces lubricant, under pressure up to 2,000 pounds to the square inch, around and under the tapered plug of the Nordstrom Valve. When this has been done and the valve is turned, it is sealed against leaks and sticking is prevented if there is any tendency of this nature.

Uses in the Paper Industry

Acid storage and overflow tank service. Blow line, diffusor, evaporator, recovery and mixing room service. Bleaching systems handling dilute solutions of calcium hypochlorite.

The advantages of this patented hydraulic principle, found only in the Nordstrom Valve, together with complete details of the application of the valve to the Paper Industry, are found in our new Catalog No. 6.

Your copy is ready. Ask for it!

"Merco" Lubricants of our manufacture are suitable to a wide range of valve services.

Nordstrom VALVES

MERCO

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MERCO NORDSTROM VALVE COMPANY

Subsidiary of The Merrill Company

Engineers—Manufacturers

Boston—184 Boylston St.
Buffalo—Genesee Bldg.
Chicago—176 W. Adams St.
Dallas—Magnolia Bldg.
Detroit—2842 W. Grand Blvd.
Houston—Petroleum Bldg.
Los Angeles—356 S. San Pedro St.
New Orleans—Masonic Temple Bldg.
New York—11 W. 42nd St.
Pittsburgh—Clark Bldg.
San Francisco—343 Sansome St.
Seattle—Colman Bldg.

Agencies in Principal Cities

Factories: Oakland, California and Belleville, New Jersey

Canadian Manufacturers—Peacock Bros., Ltd., Montreal, Cobalt, Winnipeg, Vancouver

England—Audley Engineering Co., Ltd., Newport, Shropshire

The total production was only 4,510,800 tons, but this represented an increase of 4.6 per cent over 1927. The production of paper and paper boards was 4 per cent greater, the output being reported as 10,403,338 tons.

"Newspaper Holdings of the International Paper & Power Company" is the title of Senate Document No. 11, part 2, 71st Congress, 1st Session, recently released by the Government Printing Office, being a report of the Postmaster General in further response to Senate Resolution No. 53 concerning statements made by owners and publishers of certain newspapers.

"Credit Extension and Business Failures" is the title of Trade Information Bulletin No. 627 issued by the Department of Commerce, indicating among other things that easy credit terms given retailers by jobbers and manufacturers is often a cause for business failure.

"A Directory of Governmental Testing Laboratories", will shortly be published by the Chief Coordinator of the Treasury Department, giving a classified list of all governmental laboratories and facilities made available for testing supplies and materials.

Paper Investigations—Are you getting the regular monthly and semi-monthly reports of paper investigations being made by the Bureau of Standards? If not, put in your application now.

Foreign Notes of Interest—Last year's Polish paper production is estimated to be 10 per cent higher than the preceding year, and 45 per cent over 1926, with all plants operating a maximum capacity in 1928.

Imports of paper and printed matter into Egypt during 1928 totaled $5,210,505 or a half million increase over the preceding year. Toilet tissue is about the only American paper now entering this trade.

Western Canadian farmers are urging straw for the manufacture of newsprint paper and wall board. The matter of the economic disposition of cereal straws of western Canada, enormous supplies of which are available, has long occupied the attention of the Canadian government.

Newsprint paper comprised nearly one-third of the total tonnage of Danish paper mills last year. There are ten paper mills in Denmark employing 1,518 men and women. Practically all of the production is consumed on the local market.

Except for chemical pulp, German production in the paper and board industry declined somewhat in the first quarter of this year, as compared with the same quarter last year, but exports show a rise in the paper and pulp industry.

Imports of paper into Persia last year showed an increase of 25 per cent in quantity and 18 per cent in value over the preceding year, imports being principally newsprint and cigarette paper.

Spanish paper production for 1928 was about 9,000 tons more than in the preceding year, covering manufactures of paper, board and pulp.

The Swedish paper market is anticipating increased activity in the near future, following a recent lull, as a stronger demand for kraft paper has appeared, and sulphite paper has also shown signs of activity.

◆ WISCONSIN ◆

Dells P. & P. Co. May Change to Bond

Another shift to the more specialized field is to be taken shortly by an old established Wisconsin mill, the Dells Paper and Pulp Company, of Eau Claire, Wis. Experiments are being conducted at the present time in the manufacture of bond paper, with the purpose in mind to produce it on a large scale as soon as a satisfactory quality can be developed. Several batches already have been run with good success, but further tests will be made before a program is adopted. A test well is being drilled so as to solve the problem of a pure water supply.

Manufacture of newsprint, wrapping and manila papers and second sheets has been conducted for years, but the company is looking to the more specialized market, the same as other Wisconsin mills have had to do because of the dwindling supply of nearby pulpwood, and the competitive conditions. No definite plans have been made for changing over the mills and machinery to the new grades.

Railway Motors Corp. Taken Over by Fafnir

Installation of roller bearings on paper mill machinery will be given impetus through a large deal affecting the Railway Motors Corporation, of DePere, Wis. This concern has been purchased by the Fafnir Bearing Company, of New Britain, Conn. It will be operated hereafter as the railway division of the Fafnir company, using its present sales organization in that field.

With the deal goes the patents on the Melcher roller journal bearing, now in use by the Fort Howard Paper Company, Green Bay, Wis., and under installation at present at the Northern Paper Mills, Green Bay, and the Thilmany Pulp and Paper Co., Kaukauna, Wis. Most of the business in the past has been in the railroad field, but of late there has been expansion into the paper mill field.

Lee W. Melcher will be in charge of the sales force, and will be located in Chicago. Those who remain at the plant at DePere are A. L. Maltman, of the sales department, A. W. Witbro, of the engineering department, and L. C. Koch, in charge of manufacturing.

The new 1,500-watt turbo-generator at the Fort Howard Paper Company, Green Bay, Wis., has been completely installed and is being given tests for operation. It will furnish current to two paper machines, and also will operate other motors in the mill and provide lighting current. This generator was placed in the power house just completed by the company, and is located on the second floor. The future was taken into consideration in arranging the plant, because provisions have been made to install a generator of 2,500 kilowatt capacity when needed. The new boiler house is equipped so that steam power will be ample for both generators. About $150,000 is being spent on the power house and equipment.

Satisfactory operation of Wisconsin's new rest law is shown by a survey made by the Wisconsin Industrial Commission. Regulations were modified at the request of the paper industry, when it was found impossible to employ some men on Sunday. The law required one day of rest in each seven for all workmen, thus preventing repairs and maintenance work which could be done only during the Sunday shutdowns. Workmen are allowed to work not more than three hours on Sunday on such tasks, but executives and superintendents are exempt because they perform no manual labor. The law as amended is shown to be practicable and has the full indorsement and co-operation of the paper mills.

Program Adopted by Conservation Commission

There is considerable interest in the program which the Wisconsin Conservation Commission has adopted for the preservation of the timber and pulpwood supply of the future. These are the aims of the commission as outlined by William Mauthe, state chairman:

To have the Federal Government take over 2,000,000 acres of untilled Wisconsin lands and plant them to forests; establish 7,000,000 acres of state owned forests on land now idle; encourage counties to plant forests; broaden the forest crop law to encourage individuals and corporations to grow tracts of forests; enlarge fire prevention activities to cover all forest lands; create a State forestry fund of $1,000,000 a year for reforestation and fire prevention; require scientific and selective timber cutting, and cleaning up of slash; hasten a soil survey to determine what lands are unsuited to agriculture but adaptable to timber; immediate action in the belief that a million dollars invested now will return ten million in years to come.

Consolidated to Entertain Publishers

More than a hundred newspaper publishers of four or five middle west states are scheduled to enjoy the trade relations tour which is to be sponsored and paid for by the Consolidated

ANOTHER ONE OF THE 47 MANUFACTURERS OF MACHINERY
FOR THE PAPER INDUSTRY THAT USES SKF BEARINGS

The Appleton Machine Company

YOU MAY BUY A BEARING AS A BARGAIN BUT TRY AND GET A BARGAIN OUT OF USING IT
for
Nothing is apt to cost so much as a bearing that cost so little.

SKF
Puts the Right Bearing in the Right Place

Utmost Efficiency, Not First Cost Governed Appleton's Choice of SKF

"FOR utmost efficiency the Appleton Jordan is equipped with SKF, 'the highest priced bearing in the world.'" So says the Appleton Machine Company in a recent advertisement. It is a sound tribute to engineering and design which places performance in the paper mill above any immediate monetary advantage which might be gained by using cheaper bearings.

Three basic features justify the added cost of SKF—the finest raw material, precision of manufacture and freedom from wear and adjustments. These are reflected in a uniform stock of the highest refinement... not only when the Jordan is new but after years of service. And this is so because SKF *Bearings locate the plug accurately* and maintain a uniform clearance all around the circumference between plug and shell knives... *for the life of the machine!*

SKF INDUSTRIES, INC., 40 East 34th Street, New York, N. Y. 2327

SKF
Ball and Roller Bearings

Water Power and Paper Company, Wisconsin Rapids, Wis. A special train is to start from Chicago about the middle of August for a sightseeing and pleasure trip which will take the guests through Wisconsin, parts of Michigan and Minnesota, and up into Canada.

The visitors will be taken through the mills of the Consolidated company at Wisconsin Rapids, Wis., and they also will witness the wood loading operations at Ashland, Wis. The tour will take them to points in Canada where the pulpwood is cut and rafted across Lake Superior. Amusement features are to be provided, including the world's championship log rolling contest at Bayfield, Wis., Indian pow wows, recreation in the woods and lakes, and interesting side trips. Burt Williams, of Madison, Wis., is in charge of the arrangements.

One change has been made by the Wisconsin legislature in the law on lands set aside for forest growing. The minimum acreage is now 40 acres instead of 160 acres, thus affording an inducement to individuals and corporations to start growing trees. Such tracts are taxed only ten cents an acre annually until the timber is cut, when a severance tax is applied. The amount of acreage is expected greatly to increase next year.

Now that the new 9-digester plant of the Interlake Pulp and Paper Company, Appleton, Wis., is operating regularly, a crew of workmen is razing the old digesters which furnished Mitscherlich pulp for this and other mills for many years. One accident has marred the work. Henry Meyer, a workman, was injured badly when a section of the brick buried him. His chest was crushed and a number of bones were broken.

Mill Accidents

Deaths have resulted from two accidents in paper mills during the last month in Wisconsin. Theodore J. Lenz was killed instantly while working at the Riverside Fibre and Paper Company, Appleton, Wis. He is believed to have fallen in such a way that his skull was fractured and that he came into contact with live wires by which he was electrocuted. His body was found part way in an elevator shaft, but there were no witnesses of his death.

Fatal injuries also were the misfortune of Paul Rehm, working at the Hoskin-Morainville Paper Company, Marinette, Wis. A beater roll bar let go for some unknown cause, and struck him in the head as it dropped. The youth's skull was crushed and he died instantly. He was 16 years old and had taken vacation employment.

Walls of the addition to the Northern Paper Mills, Green Bay, Wis., are completed and workmen are putting on the roof. Construction work is being hastened so that the new paper machine to be placed in this unit can be erected. Parts of it already are arriving from the Beloit Iron Works. The machine will be one of the largest in existence, and will replace two which were in use for about thirty years.

The Western States Envelope Co., Milwaukee, has purchased the factory at 742 South Pierce street, formerly occupied by the Gemco Manufacturing company. The firm will move in about the middle of July or the beginning of August, after remodeling. Present quarters will be sold or leased.

The Central Service Paper Co., Milwaukee, will conduct a general wholesale and retail paper supply business. Capital stock is listed at $20,000 consisting of 200 shares with a par value of $100. The names of Percy Paige, Morris N. Abramson and Earl W. Ferguson appear on the papers filed.

Fox River Boiler House Operating

The new boiler house and coal storage plant of the Fox River Paper Co., Appleton, is now in full operation.

The new structure measures 50 by 80 feet, and is 75 feet high. It is of face brick, reinforced concrete and structural steel. A new smoke stack 220 feet above the river level at normal conditions also was recently completed. The stack is situated on the extreme south side of the new boiler house.

Four large 507 hp. crossdrum boilers have been installed. They are equipped with four Westinghouse five retort stokers, 25 tuyeres deep, and are set in two batteries, each provided with a Copes feed water regulators and Hagen combustion control apparatus.

❖ PACIFIC COAST ❖

WASHINGTON

Machinery has been in the process of being installed in the new paper unit of the Grays Harbor Pulp and Paper Company for the past two months and if the installations are completed on schedule, actual operation of the mill will start this month.

The four-story warehouse of the Zellerbach Paper Co. at Spokane was destroyed by fire of undetermined origin early in June, entailing a loss estimated at $200,000.

Tumwater Plant Purchased by Leadbetter

F. W. Leadbetter of Portland, leading stockholder in the Oregon Pulp and Paper Co., Salem, Ore., the Columbia River Paper Co., Vancouver, Wash. and the California-Oregon Paper Co., Los Angeles, Calif., has purchased the controlling interest in the Tumwater Paper mill properties at Olympia, Wash. The Tumwater properties, located just outside Olympia on Tumwater Bay, are capitalized at $400,000.

Mr. Leadbetter is president of the newly formed organization; W. H. Trindle of Salem is vice-president; T. Osmund, Portland, who recently resigned as president of the Tumwater mills to become general manager of the Leadbetter mills, is secretary; A. S. Fleming, Portland, is treasurer; and, W. P. Donnelly, Portland, assistant secretary. The directors are: Mr. Leadbetter, Joseph C. Tyler of San Francisco, Arthur S. Blom of Spokane, Trindle, Fleming, Osmund and D. McInnis.

The Tumwater Paper Mills Co. completed in 1928, consists of a plant with a daily capacity of 50 tons of finished paper products of standard grades. It holds long-time contracts on wood supply, power, etc., as well as owning two artesian wells on the property.

Joseph C. Tyler & Co. of San Francisco has underwritten an issue of 400,000 first (closed) mortgage 7 per cent sinking fund gold bonds. The proceeds of this issue as well as the investment of the stockholders amounting to about $100,000, is to be used for the retirement of the company's present plant mortgage and current indebtedness as well as working capital.

The Rainier Pulp and Paper Co., Shelton, Wash., plans to install shortly a fourth digester in its plant at Shelton, Washington and a building is to be constructed to house the additional unit. This plant has a daily capacity of 135 tons. D. B. Davis, in charge of operations at this plant recently made a trip to the East to visit various mills.

In order to become familiar with the methods of operation in the Hammermill Paper Co. plant at Erie, Pa., preparatory to the operation of th enew paper machine now being installed in the Hammermill plant at Hoquiam, William Breitenbach, chemist of the Grays Harbor Pulp and Paper Co., recently made a trip East.

Prospects For Another Mill at Hoquaim

The construction of a second pulp mill on Grays Harbor seems assured with the recent announcement that the Aberdeen city council has adopted a resolution whereby the city of Aberdeen agreed to supply a minimum of 7,000,000 gallons of water daily to the city of Hoquiam "as soon as construction of a pulp plant at Grays Harbor Lumber Co. mill in Hoquiam is assured". Negotiations for the industrial water supply for Hoquiam were carried on for several weeks

at this point SUCCESS hangs in the balance!

EVERY stage of the manufacture of Kalbfleisch Sulphate of Alumina is managed with an eye to quality. This care is extended to the digestion step, where the highest grade of Bauxite ore, finely powdered, is treated with pure Sulphuric Acid.

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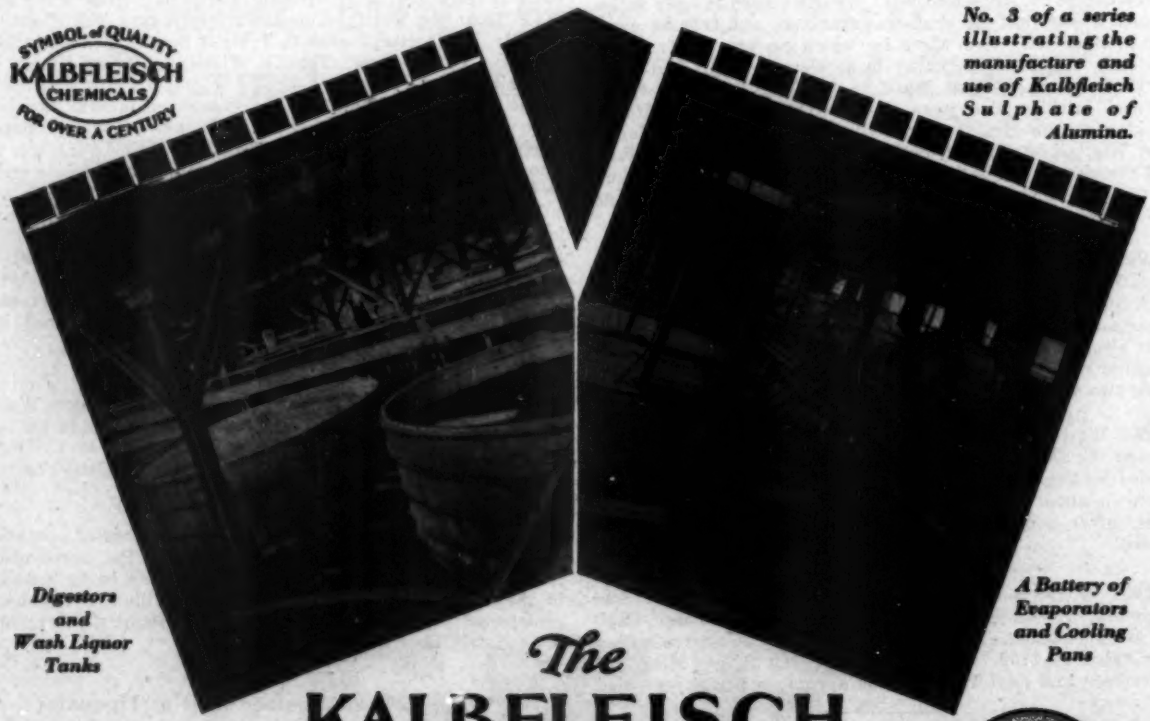

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prior to the announcement which came in late June. Plans for such a pulp mill to have been under way for about two years and it is believed that an announcement will be made shortly, now that the water supply is assured. The Clarence Blagen interests own the Grays Harbor Lumber Co. which is one of the largest sawmills on the harbor.

According to the terms of the agreement, Aberdeen will extend its industrial water line to the Hoquiam city limits and then will build through Hoquiam to the Grays Harbor mill. The water users are to pay the charges on the $100,000 investment in the Hoquiam limits and the purchasing city would have the right to take over the line by paying the costs and interest.

Plans for Pulp Mill at Everett

The option on a waterfront site for a pulp mill at Everett taken a few months ago by the Puget Sound Pulp and Timber company, headed by Ossian Anderson, has been taken up in full and the purchase price met. The site, which comprises more than 25 accres, bounded by the Great Northern on the south and east, the old flour mill on the north and runs to deep water on the west, is considered by Everett industrial leaders as one of the most strategic plant sites in that vicinity. The option was given by the Everett Improvement company, the Robinson Manufacturing Co., the Everett Trust and Savings bank and a few other small property holders.

The Puget Sound Uulp and Timber Co., a combination of the leading northwest lumber companies, plans to erect a 150 ton pulp mill on this site at a cost of about $3,000,000. Preparatory to the carrying on of the project, the company recently purchased a large acreage of pulp timber in the Monte Cristo basin, the Monte Cristo railroad and the Rucker mill at Lake Stevens.

The Crown-Willamette Paper Co. began the construction of a new bleaching plant on June 15, the first step in its $300,000,000 expansion program at the Camas mill. The construction of the groundwood mill is scheduled to start early in the fall, according to an unofficial report.

The pouring of concrete for the Willapa Pulp and Paper Mills plant at South Bend on Willapa harbor was scheduled to start this month, the preliminary work have been nearly completed in June. J. B. Hennessey is local manager in charge of the work.

A pulp chip and hogged fuel plant is being constructed at Everett, by the International Wood and Sulphite Co., of which K. O. Fosse is head, on a site adjoining the sawmill of the Canyon Lumber Co. This plant, which will have a daily capacity of 300 units of pulp chips and hogged fuel, will be completed about August first, according to present plants. This concern operates several similar plants in the Northwest, supplying pulp mills with raw material.

OREGON

Improvements costing about $85,000 and including the installation of a 15 x 49 foot Willamette Digester, the addition of a 300 hp. boiler, enlargement of the boiler room, installation of a 3-cylinder pulp thickener and four flat screens, are now underway at the Spaulding Pulp and Paper company plant, of Newberg. This will be the third digester and at capacity run would increase the daily output to 24 tons, but at present will be run on a 12 tons a day basis. This, however, will increase the output to 60 tons a day. The schedule is to complete the improvement plans by October first. Later, it is reported, a bleaching plant will be added. G. A. Spaulding is president of the company.

Possibility of the establishment of a paper board factory in Salem to utilize the shives of flax straw from the state flax plant is evident from an offer of F. Puttaerd of San Francisco to bring his plant to Salem if sufficiently support for the venture is offered by local busines men. The plant in San Francisco has been idle for two years due to lack of raw material. The plant, proposed by the San Francisco man, can more than be supplied by the by-product of the flax plant at Salem, it is said.

Blythe & Co. Buys Interest in Hawley Mill

A controlling interest in the Hawley Pulp and Paper Co., founded at Oregon City by W. P. Hawley, has been purchased by Blyth & Co., bond house, with local offices in the Pacific Bldg. according to an announcement made July 2, by M. B. Griffith, northwest manager for Blyth & Co.

In Mr. Griffith's statement, it was pointed out that this company will continue to operate the mill as a separate property, not permitting it to be merged with any other pulp and paper company holdings.

Refinancing of the Hawley properties was under way for several days previous to the announcement of the purchase and while it is understood that this is completed, Mr. Griffith declined to state other than his company had purchased it. He declined to state who would be president and manager of the mill. Early in 1928, the company spent $2,000,000 on additions to the plant, increasing the output and the efficiency. In April of this year the company failed to pay quarterly dividends but on July 2, interest on its bonds was met.

The Hawley Pulp and Paper Co. has a capacity of 150 tons of mechanical pulp and 85 tons of bleached sulphite pulp daily. Although it is equipped to make sulphite wrapping paper and lightweight papers, it has concentrated principally on newsprint, having a capacity of 120 tons of newsprint and 85 tons of sulphite paper daily.

Complete Plans for Fir-Tex Plant

Plans for the proposed Fir-Tex plant at St. Helens, are about completed, according to an announcement made recently by A. E. Millington, vice-president and general manager with offices in the Pacific Building, Portland. He stated that contracts for the preliminray work will be let shortly, which will include clearing the site, laying spur track and digging water mains.

The stockholders have authorized the expenditure of $100,000 for this purpose.

A 173 acre tract of land with a water frontage on Scappoose Bay, near St. Helens, has been purchased and construction of the main plant is expected to start in about two months, the time allowed for the completion of clearing and other preliminary work. The stockholders have authorized the staff of engineers which this company employs, to begin the drawing of plans. Bids are not to be called for publicly, officials reported.

Other officers of the company are: H. F. McCormick, St. Helens, president; K. D. Dawson, Portland, treasurer; John S. Coke, Portland, secretary. Directors are: Franklin T. Griffith, Portland; John S. Baker, Tacoma; W. D. Dean, Chico, Cal.; Charles F. Shea, Portland; H. F. Fleishacker, San Francisco; L. A. Phillips, Los Angeles; C. E. Dent, Portland; T. G. Taylor, Portland.

Charles Ruble, Los Angeles, was elected president of the Pacific Coast Paper Box Manufacturers' association, which met in Del Monte June 24, 25 and 26 for its 16th annual convention. Rufus Holman, Portland, was elected vice-president; R. O. Comstock, San Francisco, secretary; J. A. Scully, Seattle, new member of the board of directors, and Hugh Peat, San Francisco, general secretary.

CALIFORNIA

Crown-Zellerbach corporation, for the first fiscal year of unified operation ending April 30, 1929, reports net income available for the common stock after all prior charges and preferred dividends of $3,425,359, equivalent to $1.72 per share on 1,991,608 outstanding shares, according to the annual report published yesterday. This compares with adjusted earnings of $3,087,756, or $1.55 a share on the same capitalization for the fiscal period ending April 30, 1928.

The Pacific Coast Pulp and Paper Company has started construction of a $625,000 plant at Richvale, Cal.

New Inserted Blade Cutter Reduces Cutter Costs 40%+

Something NEW... more EFFICIENT and a MONEY SAVER for every mill that uses a Cameron Machine. THE NEW PATENTED SIMONDS CIRCULAR PAPER CUTTER. It is a very decided improvement over the old style solid cutter.

You don't have to throw away your cutters after a few months' use, but continue to use the NEW SIMONDS HOLDER which will last as long as the machine itself. All you need is a small supply of cutter inserts which are inexpensive, and because of their high-quality steel and hardening which extends right through the blade (not only a fraction from edge toward center) they require less grinding. The NEW SIMONDS PATENTED CUTTER, being made from SIMONDS own tough steel withstands wear and requires less frequent sharpening. With the SIMONDS PATENTED CUTTER inserts you always have a sharp blade ready to insert with only the effort of shifting a few screws. It's rigid. It's strong and the blade is keen. The NEW SIMONDS PATENTED CUTTER reduces the amount of money invested in cutter stock. The three-inch insert costs less than one-half as much as a solid cutter and the four and one-half inch size costs less than one-third.

You can now secure these cutters from any Simonds service station or branch office.

...Blade Inserts Make Big Reductions in Replacement Cost

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"The Saw Makers"

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IDAHO

Actual construction of the $1,000,000 pulp plant at Priest River, Idaho, by the Pacific States Pulp and Paper Co., was scheduled to start this month, the preliminary work having been carried on for some time and due to be completed at this time. It is reported a mill site along the west side of the Great Northern tracks between the Beardmore mill and the business district of the town has been purchased from C. W. Beardmore.

BRITISH COLUMBIA

The Pacific Mills, Ltd., of Ocean Falls, B. C., of which a controlling interest, amounting to 88 per cent, is owned by the Crown-Willamette Paper Co., in its annual report for 1928, announced a net profit for the year of $954,961, after dominion and provincial income taxes were deducted. This was a gain over the previous year when the net profit was $788,600. The report stated that capital expenditures for 1928 were $265,022 and that they would probably amount to about a million dollars for 1929. A. P. Martin, president of the company, stated that overproduction in the United States and Canada continues, holding the low price level and that this condition would probably exist during most of this year.

MICHIGAN

The Cost and Technical Association of the Paper Industry, Kalamazoo Valley division, met June 18, at the Otwellegan Country Club. There was a dinner with golf in the afternoon. Two speakers appeared on the program. Frank Whittington of the technical department of the Sutherland Paper Company talked on "Results of Survey on Size and Alum Losses." The second speaker was Thomas W. Peck, Secretary of the Kalamazoo Vegetable Parchment Company, whose subject was "Insurance Problems from the Standpoint of the Insurer."

Sutherland Paper Company's gross profit on sales for 1928 were $690,234.16 according to a report just completed by Haskins and Sells, auditors. Selling and administrative expenses are placed at $320,556.43, other charges less other income, $2,372.04; federal income tax, $45,102.08; net profit, $322,203.81. For the year ending December 31, 1928, the current assets to current liabilities were $1,483,615.60 to $347,430.59, or better than 4¼ for 1. There is a total surplus of $1,023,817.34.

Kalamazoo Mills Make Trainload of Paper Daily

Kalamazoo paper mills are making a train load of paper daily as this city enters its first centennial celebration.

Long heralded as the "Paper City," Kalamazoo has been able to maintain that distinction by sheer accomplishment. Despite the recent rapid inroads of automobile and metal working plants, paper still continues to be Kalamazoo's chief product.

Mills in Kalamazoo proper have a daily production capacity of 2,173,000 pounds of paper and paper board. Mills in adjacent communities, counted in the Kalamazoo valley paper district, make 4,178,000 pounds daily in this territory or 2,089 tons, enough to load over one hundred 40,000-pound capacity cars.

There are in the Kalamazoo valley district, extending from Battle Creek on the East to Niles and Watervliet on the west, north to Otsego, and south to White Pigeon, a total of 16 papermaking concerns. Nine have mills in Kalamazoo. The balance are located in other towns in the valley. Kalamazoo capital is heavily interested in a majority of these concerns both in and out of the city.

The companies operate at this time 39 mills. The mills are equipped with 58 fourdrinier and cylinder paper machines and can produce daily 2,048,000 pounds of various grades of paper and 2,130,000 pounds of carton, box and container board. In addition to the paper mills proper, seven of these concerns operate coating plants. These have 98 coaters, producing 636,000 pounds of coated paper daily and make Kalamazoo the world's center for that industry.

The mills in the Kalamazoo valley have been able to operate on a generally satisfactory basis during the last five years and give pretty steady employment to the thousands of men women on the payrolls. At the same time, millions of dollars have been spent in improvements and expansions of the various plants. Today there is not a mill in the valley that cannot make more paper and at a lower price than in 1925.

One of the important steps taken in the industry was the consolidation of the Sutherland Paper Company and Standard Paper Company, under the control of the first named concern. Sutherland now produces over 40 per cent of the paraffined cartons used in the United States and is recognized as the most important concern in that line in the country. It has 1,800 active customers.

The Bryant Paper Company has added a 166-inch fourdrinier machine and made vast improvements in methods of raw stock and power production. The program expansion at that plant is not as yet completed.

The Kalamazoo Vegetable Parchment Company also has added another 166-inch fourdrinier and completely reconstructed and re-equipped its power plant and other division.

The Watervliet Paper Company has practically rebuilt its plant at Watervliet, adding a new paper machine and increasing its coating capacity.

The Michigan Paper Company purchased the assets and plant of the defunct Bradford Paper Company and now operates in Kalamazoo a well-equipped coating mill.

The Mac Sim Bar Paper Company, Otsego, has electrified its entire equipment and rebuilt one of its two board machines.

Other mills in the valley reporting enlargements of the first importance during the last five years are: Hawthorne Paper Company, Kalamazoo Paper Company, Rex Paper Company, Allied Paper Mills, Western Board and Paper Company, and Michigan Paper Company, the latter in its mills at Plainwell.

The Paper Technologists Club was guest of the Sutherland Paper Company, Wednesday evening, June 12. Dr. Erick Richter of the British Columbia Pulp and Paper Company, Port Alice, British Columbia, gave a resume of recent researches on the relation of Chemical and physical properties of pulp. Carl Schneider of the Hawthorne Paper Company, Kalamazoo, read a paper on "Pulp Valuation for Different Paper Mills." A tour was made through the Standard division paper and carton plants.

Homer McDonald of Otsego, a millwright in the employ of the Standard Paper Company, was fatally burned when he fell into a pool of hot oil. He had been with the company for several years.

Victor Smith, an employee of the Kalamazoo Paper Co., was injured recently when a roll from a paper machine fell crushing his foot.

Felix Pagenstecher, president of the Bryant Paper Company, was re-elected a director of the Michigan Mutual Liability Company, at the annual meeting held in Detroit, June 27. W. A. Fitzsimmons is president and general manager. His report on the condition of the company showed that May 31 the total assets were in excess of $4,500,000. There has been a satisfactory increase in earnings of late.

Peter Servaas, one of Kalamazoo's best known mill men and for the last six years assistant to Felix Pagenstecher, president of the Bryant Paper Company, has resigned his post and will retire. He has no plans for the future. Since joining the Bryant forces, he has been chiefly interested in sales promotion. Previous to his connection with the Bryant Paper Company, he was with Mr. Pagenstecher in the Riverview Coated Paper Company, a concern taken over by the Kalamazoo Paper Company.

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What are your costs of lubrication per ton of finished product? Are they higher or lower than the average? Can they be reduced?

The answers to these questions mean far more than the mere possibility of cutting the actual cost of lubricants. Lower depreciation, lower production costs, lower power consumption and reduced wear on bearings are other economies that inevitably follow the adoption of a really effective lubricating procedure.

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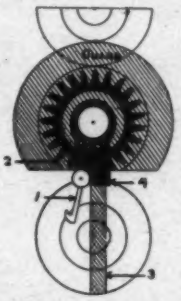
Practical Helps for the Mill Man

Safety Guard for Cog Wheel on Calender Stock

A MACHINE room attendant recently had an unpleasant experience while wiping grease, oil and dirt from the journals and bearings on the front side of his calender stack. A cogwheel is mounted on the front end of one of the center rolls of the stack which is used to move the rolls over by hand. By placing the idle dog (1) into one of the cogs (2) and a lever (3) into the socket (4) which hangs loose from the center calender roll journal, the moving of the rolls by hand can be brought about. When the calender stack is in motion, the cogwheel is revolving at full speed while the lever socket and also the dog are hanging idle.



The man referred to caught his wiping rag in the cogwheel and the rag being twisted about his finger caused the latter to be pulled off when the rag came in contact with the lever socket. Moreover, it came near costing him more, because the lever was in the socket, and when the rag bound the socket to the cogwheel, this caused it to make a complete revolution bringing the lever around with it and hitting the man on top of the head.

The superintendent pondered over the problem of a proper guard and finally developed the one shown in the accompanying sketch. The bottom of it is open, the back side being slotted to permit it to slip down over the roll shaft. The front side has a hole just large enough to permit the roll shaft to come through, although this is not necessary. The guard is held in place by three machine screws fastening it to the lever socket at positions A, B, and C. The dimensions of the guard are governed by the thickness of the socket and the diameter of the cogwheel, as the guard is put in place by sliding it down over the top of them. It is made of galvanized sheet iron.

Chisel Holder

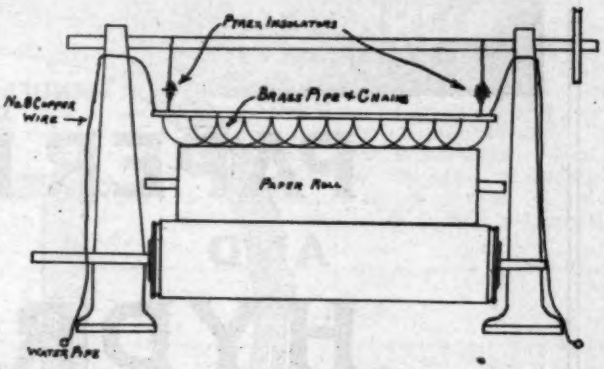
IN chipping concrete for maintenance or new construction, or in removing brick linings from process equipment or building construction, it sometimes becomes necessary to resort to hand chiseling. Frequently, one operator holds the chisel while a second swings the sledge. As an added safety factor, a workman was noticed recently to make use of a short section of heavy-walled rubber hose. The chisel, which the operator was guiding, was inserted through a slot cut through both walls of the hose with the slot cut near one end. The other end of the hose served as a handle. Such a holder made it possible for the worker to handle the chisel in safety, and at the same time reduced the shock which would be obtained if held by hand or with some of the ordinary types of holders.

Determination of Moisture in Pulp

PULP is commonly sold or even used about the mill with all calculations based on air dry weight. In determining the air dry weight of a pulp shipment, it is necessary to weigh samples taken from various rolls, laps, or bundles in the shipment. These samples must then be placed in an oven and dried until all moisture has been evaporated or until the samples reach the condition designated as bone dry. Ten per cent of moisture is estimated as the percentage in air dry pulp. It is, therefore, necessary to convert the bone dry sample reading to that of air dry weight. It is a simple matter to make this calculation. The bone dry weight of the sample equals 90 per cent of the air dry weight. Therefore, to obtain the air dry weight of the sample, simply add the bone dry weight of the sample to the figure obtained by dividing the bone dry weight by 9. This figure obtained by dividing the bone dry weight by 9 equals 10 per cent of the air dry weight of the sample. For example: Suppose the wet weight of the sample was 150 ounces, while the bone dry weight was 94.5 ounces. Then the 94.5 ounces equals 90 per cent of the air dry weight of the sample. This figure divided by 9 equals 10.5 or 10 per cent of the air dry weight. 94.5 plus 10.5 equals 105 ounces—air dry weight of sample. The percentage of air dry pulp in sample is, therefore, 105/150 or 70 per cent.

Static Eliminator

NEARLY every machine tender at some time has had experience with static electricity in paper and has developed some scheme to eliminate it from the sheet. One mill found the device as illustrated of real merit in removing static electricity from paper being produced in their plant. The device consisted of a ⅜ inch O.D. brass pipe to which was attached a series of short, lightweight brass chains.



The brass chains were set across the entire length of the pipe with both ends attached to the pipe as shown in the sketch. The entire mechanism was supported from the top of the winder and insulated through pyrex insulators. At the same time, the brass pipe was grounded from both ends to a water pipe with No. 8 copper wire. The supporting chains for the static eliminator are raised manually with the demand caused by increased diameter of roll.

Honorary Degree for Dr. Little

Dr. Arthur D. Little, president of Arthur D. Little, Incorporated, delivered his presidential address before the Society of Chemical Industry of London, at Manchester, England, July 9. His subject was "Science and Labor". He called attention to the opportunities for employment created by scientific discovery, offsetting labor displacement by improved manufacturing practice, new industrial processes and invention.

During his stay in England, Dr. Little will receive the honorary degree of Doctor of Science from the University of Manchester and Honorary Associateship in the Manchester College of Technology. He expects to return to the United States late in August.

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Canadian News

The Newsprint Outlook

There can be no doubt that a much better feeling prevails in newsprint circles at the present time than for many months past. This has been brought about by the tangible evidence of a steady and progressive growth in the demand for newsprint, enabling the mills as a whole to increase their ratio of output to capacity. The export figures for both April and May show that not only has tonnage increased over last year, but total value as well, despite lower prices. The improvement which has been under way since the beginning of the year was carried still further in May, with the Canadian mills operating at 87.5 per cent of rated capacity during that month, as compared with 81.5 per cent for United States mills. According to a recent statement by S. H. Logan, general manager of the Canadian Bank of Commerce, the agreement recently effected between a number of the most important Canadian newsprint producers providing for a pro rata distribution of orders can be taken as the most constructive step yet taken to stabilize the world paper industry, which, in practically all its branches is suffering from over-expansion.

A number of statements which have recently been published would seem to indicate that the functions of the Canadian News Print Institute are not properly understood. Canadian laws prohibit combinations for controlling price and output; but they apply only to domestic trade and not to export business. As far as the Canadian publishers are concerned, therefore, the Canadian News Print Institute is not a factor in the situation at all, its operations being confined exclusively to export business. Furthermore, it is not a selling organization: where it enters into the calculations is in regard to the equalization of tonnage in relation to the capacity of the various mills, and even in this direction no joint control has been established over the distribution of business with Canadian publishers.

Newfoundland Newsprint Mills Operating at Capacity

While newsprint mills in Canada have been on curtailed production for many months past, the two big newsprint mills in Newfoundland are running at full capacity (the exact figure for May, according to the News Print Service Bureau, was 101.4 per cent), producing over 800 tons per day between them. The Anglo-Newfoundland Development Co.'s mill at Grand Falls is turning out 312 tons per day. This company is owned by the Harmsworth interests, the proprietors of the London Daily Mail and other English newspapers, and the product goes to England.

The rated capacity of the International Paper Co.'s mill at Corner Brook is 460 tons per day. When the mill was acquired by the company in 1928, its average production was 438 tons. Its efficiency has since been greatly improved, and now it is turning out over 500 tons per day, the mill, it is stated, being the lowest cost producer belonging to the company. In accordance with the agreement entered upon when International Paper acquired the mill from English interests, its capacity is to be increased to 600 tons by 1933; and it is reported that the expansion is to be started this year.

The Anglo-Newfoundland Development Co. is also reported to be considering increasing its paper output.

The Inter-State Commerce Commission, at Washington, has ordered suspended from June 21, 1929 to January 21, 1930 a proposed increase in freight rates on newsprint paper and other paper articles from points in Canada to New York, Chicago and a large number of other cities in the United States. The increased rates were to apply in general from the producing territory in Canada to points in the United States east of the Missouri River, and they were ordered suspended pending an investigation by the Inter-State Commerce Commission.

At a recent meeting of the executive commitee of the Canadian News Print Institute, the various reports, formal and informal, indicated that the Institute had been able, during its first few months of existence, to justify the hopes of its founders, and the able manner in which P. B. Wilson, executive manager, has conducted it; and put it on record as being able to serve the interests of its membership and the manufacture and marketing of newsprint in Canada.

Extensive airplane dusting experiments were conducted in the Sudbury district last month for the control of the spruce budworm in pulpwood stands. The work was carried out under the supervision of Dr. J. M. Swaine, associate Dominion entomologist, through the co-operation of the Dominion Entomological Branch, the Dominion Air Service, and the Ontario Forestry Service. Following the completion of operations in the Sudbury district, similar dusting operations will be carried out in co-operation with the Quebec Forestry Service along the north shore of the St. Lawrence River.

Recent advices from St. John's, Newfoundland, state that a model of a novel vessel, to be known as the Balfour-Fisher dump barge, intended to handle pulpwood more effectively, has been designed by two residents of Corner Brook. The craft will have collapsible sides, permitting, it is hoped, the instantaneous discharge of pulpwood without the laborious process of unloading by winches and slings. Another feature of the barge will be its shallow draught, doing away with the long tows from steamers to shore. If the vessel works successfully it is believed the invention may revolutionize the carrying and unloading of pulpwood on this continent. An estimated saving of $1.50 per cord, as compared with the steamer cost of loading and unloading is expected.

❖ QUEBEC ❖

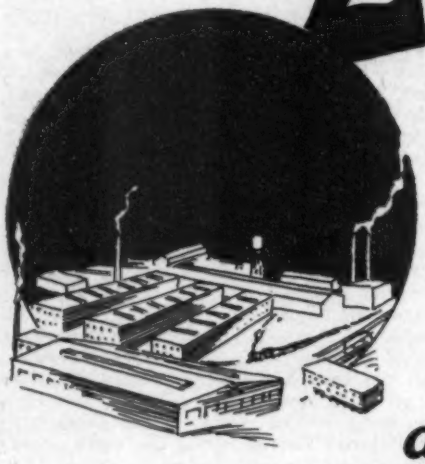
First Report of Lake St. John P. and P. Co.

The first annual statement of the Lake St. John Power and Paper Co., covering the year ended February 28, 1929, shows gross profits for the year at $920,566. After deducting depreciation reserve of $192,899, interest charges of $565,509, and income tax of $13,000, there remained a net balance of $150,157. This was more than sufficient to cover dividend requirements on the 7 per cent preferred stock of $2,000,000. As no dividends were paid, however, the balance was carried forward to profit and loss account.

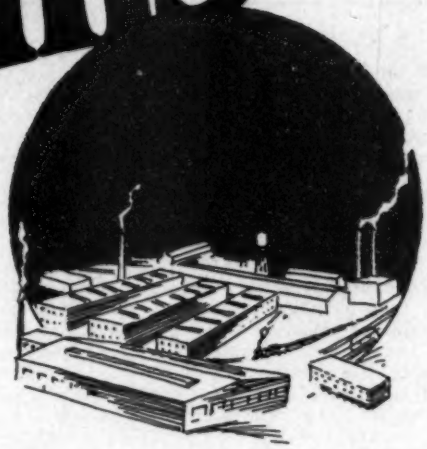
In addition to the depreciation reserve shown above, there was a further reserve for depletion of timber limits of $167,959, that had been set aside before arriving at gross profits. This brought the total of reserves for depreciation and depletion to $360,858. In spite of unsatisfactory conditions in the industry, the company showed bond interest earned 2.8 times, and debenture interest earned 3 times after bond interest.

Dealing with the general situation, the president stated that the figures were not representative of what the company could do under normal conditions, as the first newsprint machine did not start operations until the middle of February, and the second machine about the middle of March. Earnings were cut down for a considerable time while the machines were being tuned up. At present, how-

2 Mills



(As Indicated By Our Sketch)



and what we know about them!

Heating and Ventilating Requirements For This Coming Fall and Winter Should be Planned Now

The largest savings from operation of Ross apparatus for heating and ventilating, are naturally derived during the coldest weather. The required apparatus should be installed sufficiently in advance so as to be in actual operation when the first drop in outside temperature occurs.

For old mills, Briner Economizers can usually be placed on roof, or outside machine room walls. Why not talk over possibilities with our engineering staff now.

Mill No. 1 during an average winter season used 10,000 pounds of steam for every ton of paper dried. For every day during a month, steam cost for drying alone ran about $225.00 and for the average month this item amounted to nearly $6000. Quite an item in the operating cost of a less-than-100-ton mill.

Mill No. 2 during the same period and operating to about equal capacity under the same outside temperatures required 3300 pounds less steam per ton of paper dried. This substantial saving was effected as a result of operating a Briner Economizer and Ross-Grewin High Pressure System.

Here is an example of how efficient ventilation and utilization of heat that otherwise would be wasted, produced, in a Ross equipped mill, a saving in steam alone amounting to approximately $2000 a month. Surely the important advantage of insuring such reductions in the cost of manufacture, especially in view of competitive conditions, deserves the utmost consideration of every mill manager.

Write for a copy of our Bulletin No. 14 which describes and illustrates this system as operating in prominent mills. No obligation.

J. O. ROSS ENGINEERING CORPORATION

208 W. Washington Street, CHICAGO — Main Office—122 East 42nd Street, NEW YORK — 519 American Bank Bldg., PORTLAND, ORE.

ROSS ENGINEERING OF CANADA, LIMITED

NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS

HEATING—VENTILATING—DRYING

ever, they are working very satisfactorily and in February average production reached 249 tons per day. For the present, however, as the result of the general agreement, the company's output will be curtailed to about 75 per cent of capacity. But it is hoped that the step taken by the combined mills will prove in the end a very constructive one for the company.

Preliminary to the development of the latent water power resources of the St. Maurice River above La Tuque, in accordance with the concession obtained from the Quebec Government, the Shawinigan Water and Power Co. is building a line from Shawinigan Falls northward to La Tuque, a distance of approximately 60 miles. This line will eventually connect with the first of four power developments, construction of which must commence by July 1, 1930, and is also designed to serve a new customer, the Brown Corportation, which operates a 200-ton sulphate pulp mill and lumber mills at La Tuque. The company will take a maximum of 15,000 hp. over this line.

Building Products Develops New Container

Last month Building Products, Ltd., made the first shipment of a new type of solid fiber shipping container which is being manufactured in the plant at Portneuf. According to the management, the new product has not only come up to expectations from the production standpoint, but is already finding a ready market. It is made entirely by the company from paper which is produced at the Portneuf mill, the operation extending all the way through to the finished container. This latter operation is handled at the new plant constructed for the purpose at this point.

The company, in association with the St. Maurice Valley corp., now one of the components of Canada Power and Paper Corporation, has completed the new mill located at Port Alfred for the manufacture of "Insul-Board". Another new development of the company was the undertaking of the manufacture and distribution of a new type of thick-butt asphalt shingle, which was entirely originated by the organization. All four plants of the company are being operated at a normal rate of capacity.

The two new machines which have been installed by the St. Lawrence Paper Mills are not producing as yet, but will be put into operation as conditions warrant. The company now has six machines, with a total capacity of 450 tons per day. The plans are to install two more machines when the time is considered ripe for such a move.

F. T. Atkinson has recently been appointed purchasing agent for the Anglo-Canadian Pulp and Paper Mills, succeeding T. C. Creaghan who has accepted a position with the International Paper Co., at Dalhousie, N. B. Mr. Atkinson was in the purchasing department of the Ste. Anne Paper Co. and has been assistant purchasing agent of that company until about a year ago when he accepted the position of assistant purchasing agent at the Anglo-Canadian mill.

Canipco News

The new storage dam of Gatineau Power Co., on the upper Gatineau River, is nearing completion. The reservoir above the dam already holds three billion cubic feet of water, and storage of the balance of its capacity will commence about September 30, when construction of other cut-off dams is completed. The new dam, storing the waters of Lake Cabonga, and the present Mercier storage dam, will form reservoirs ranking with the large water-storage systems of the world. The aggregate capacity of the two reservoirs will be 145 billion cubic feet, or one and two-thirds times that of the famous Assouan dam on the Upper Nile in Egypt. Of a capacity of 45 billion cubic feet and draining a territory of 1150 square miles, the Cabonga reservoir will materially assist the Mercier reservoir in regulating the flow of the Gatineau River, on which the Gatineau Power Co. has three hydroelectric plants of a combined designed capacity of 562,000 hp. of which 436,000 hp. is installed and in operation.

ERKENSATOR

Now—

Absolutely Clean Pulp and Paper

free from Specks and Impurities

Following are abstracts from correspondence received:

"Scarcely any invention has met with such rapid response among paper mills as the Erkensators."

"We consider it one of the greatest, if not the greatest improvement made in the Paper Making industry during the last 25 years."

"Its possibilities of employment are manifold with most remarkable results in every case."

"It is almost impossible to enumerate the merits of this machine in order of their importance."

"By its help it is, for the first time, possible to produce a really clean sheet of paper free from specks."

"The savings effected by the Erkensators are of such magnitude as to have the cost of the installation pay for itself in a short time."

Now used for making

Bond, Ledger, Drawing, Tracing Parchment, Photographic, Nitrating, Glassine, Bamboo Pulp, Cigarette, Tissue, Condenser, Typewriter, Insulating, Cable, Greaseproof, Cornstalk Pulp

An Erkens' Engineer will be pleased to visit your plant and explain how the ERKENSATOR can revolutionize your process, without obligation.

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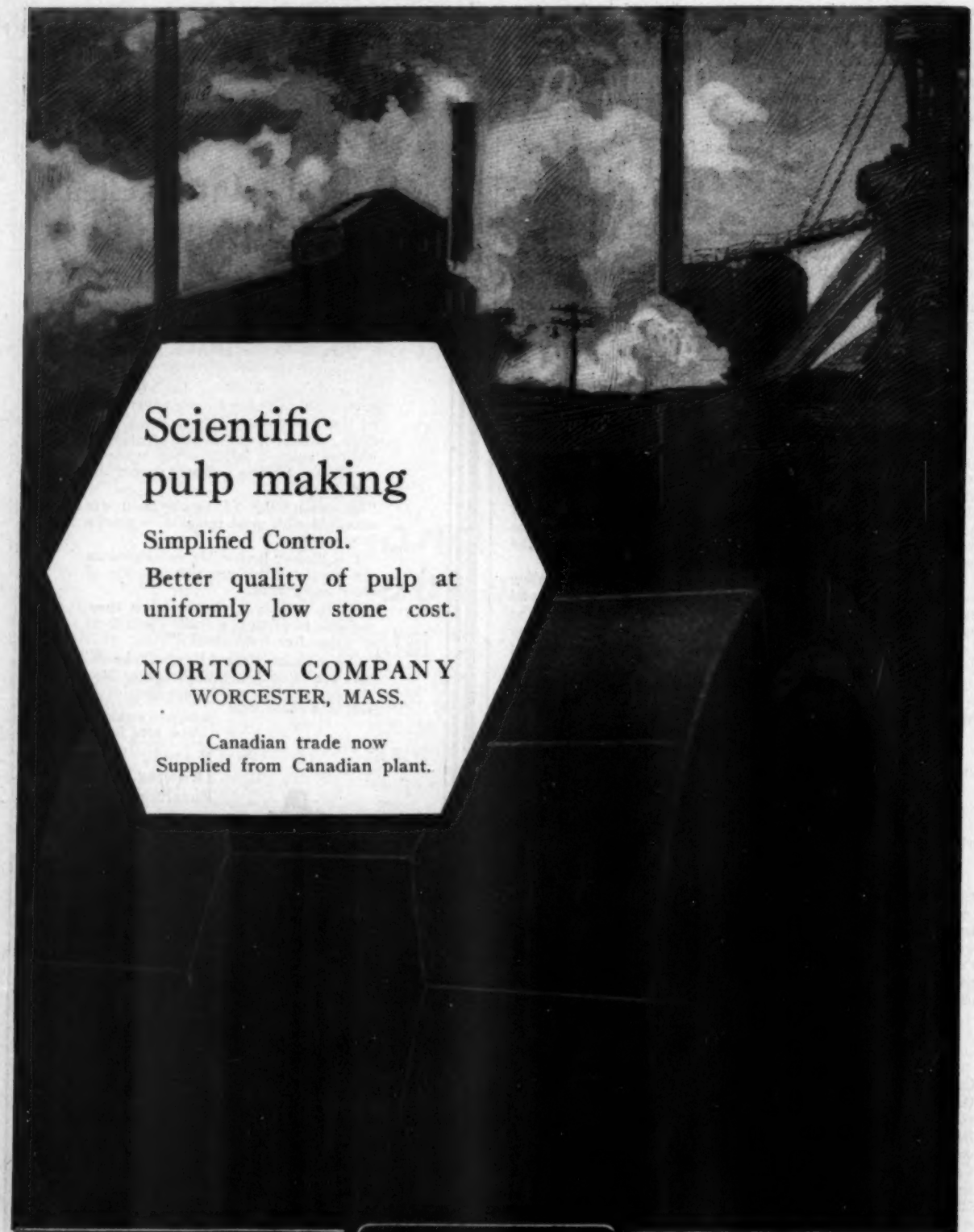
Scientific
pulp making
Simplified Control.
Better quality of pulp at uniformly low stone cost.
NORTON COMPANY
WORCESTER, MASS.
Canadian trade now
Supplied from Canadian plant.
Grinding Wheels
Grinding Machines
NORTON
PULP STONES
Refractories - Floor
and Stair Tiles

It is again reported that Canadian International Paper is planning the erection of a new head office building in Montreal. The plans discussed include the demolition of the buildings on the present site at Beaver Hall Square, and the erection of a large new office building to provide ample facilities for the requirements of the company. It has not been possible to obtain confirmation of the rumor.

The Shawinigan Water and Power Co., Montreal, is planning for extensions in its three hydroelectric power plants at Grand 'Mère, Shawinigan Falls and La Gabelle, on the St. Maurice River, with the installation of additional equipment to provide for a gross output of about 100,000 hp. at the three plants, which will be made available for pulp and paper mills and other industries served by the company. The development will be carried out in connection with the approval of the Provincial Government for the construction of a large reservoir on the Mattawin River, a tributary of the St. Maurice, which will make available an additional water supply for the hydroelectric stations. The Mattawin project will be placed under way at an early date, and is estimated to cost close to $4,000,000.

ONTARIO

The first unit of the new boiler plant of Howard Smith Paper Mills, at Cornwall, has been completed, but will only be used as a stand-by plant until the company's complete power program has been rounded out. At present the company purchases the majority of its power requirements. It is thought, however, that comprehensive plans have been drawn up embracing the construction of a large new power plant over a period of two or three years. On completion, this should prove a substantial factor in the reduction of operating costs.

First steps towards putting into effect the pulpwood conservation act passed at the last session of the legislature were taken last month by W. C. Cain, deputy Minister of Lands and Forests, when a circular letter was sent out to Ontario's 800 pulpwood land licensees asking for the information required under the act.

T. W. Dwight, J. F. White and R. C. Hosie, of the Faculty of Forestry of the University of Toronto, are investigating problems connected with the development of the pulpwood supply of Ontario. The purpose of the work at present under way is to determine the limits of the burnt over areas which will never be productive again and the areas on which pulpwood may be expected to grow. The study resolves itself into a determination of growth and yield.

According to W. E. N. Sinclair, leader of the provincial Liberal party, the present Government is alienating the forest wealth of the province and letting it go, untendered and without reserve, into the hands of United States capitalists. He instanced more particularly the letting of a number of blocks (mostly to the Backus interests) aggregating nearly 12,000 square miles, during the administration of G. Howard Ferguson, the present premier, who was then Minister of Lands and Forests.

The Government has named twenty-six leaders in various lines of endeavor—industrial, agricultural and scientific—to serve as an advisory committee to guide the work of the Ontario Research Foundation. Among them is J. H. Black, vice-president of the Spruce Falls Power and Paper Co.

The Thunder Bay Paper Co., of Port Arthur, recently made its first water shipment for the season, consisting of 1000 tons of newsprint for Chicago. Regular water shipments will be made during the season. The mill has two newsprint machines with a daily capacity of 225 tons, and is jointly owned by Abitibi Power and Paper and Canada Power and Paper.

Type 2560 American Mercury Actuated, Air-Operated Temperature Controller for All Temperatures from Minus 40 to 1000° F.

You can actually check profits with American Temperature Controllers. Many plants in every industry have found that out. When the difference of a few degrees in temperature means spoilage, or loss of power and heat, or poor quality, or loss of time, or decreased production —then Temperature Controllers pay.

If any heating or cooling operation requires regulation, it can be done better automatically. Write us about your problems.

The American Mercury-Actuated Temperature Controller is the result of long experience in research and design. The spiral steel spring used is the same as that in American Recording Thermometers. There are no connecting levers or links—the movement of the spring being transmitted to the air valve directly, thus eliminating friction and backlash.

It is simple in construction and positive in operation. Each instrument is thoroughly tested before shipment. Accuracy is guaranteed. Short or long ranges from minus 40 to plus 1000° F. Accuracy is the same for any temperature within the range.

Specify Catalogs Desired

American Recording Thermometers	H-41
American Glass Thermometers	F-41
American Dial Thermometers	G-41
American Recording Gauges	E-41
American Sulphite Gauges	A-41
American Paper Machine Tachometers	O-41
American Temperature Controllers	R-41
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CONSOLIDATED ASHCROFT HANCOCK CO., INC.
Bridgeport, Conn.
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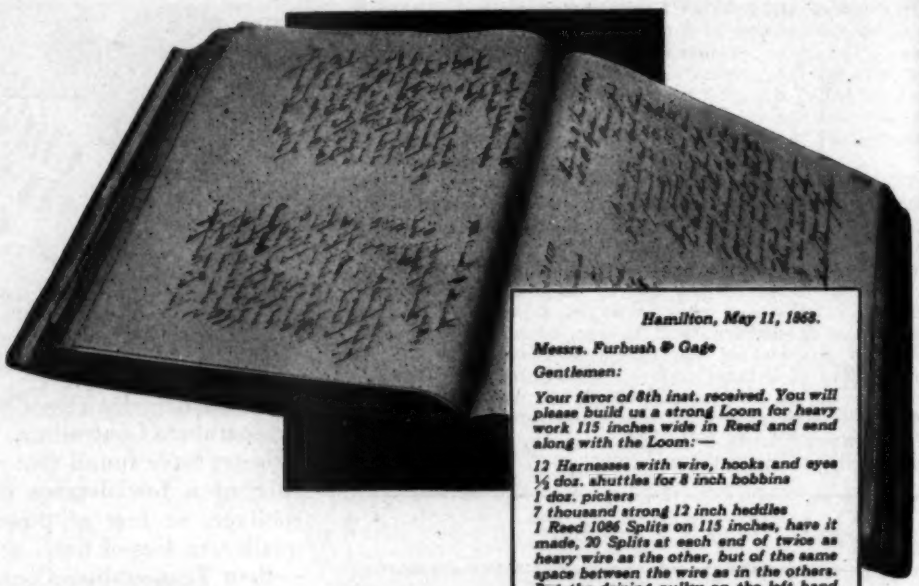
AMERICAN INSTRUMENTS
SINCE 1851



Hamilton, May 11, 1868.

Messrs. Furbush & Gage

Gentlemen:

Your favor of 8th inst. received. You will please build us a strong Loom for heavy work 115 inches wide in Reed and send along with the Loom:—

12 Harnesses with wire, hooks and eyes
½ doz. shuttles for 8 inch bobbins
1 doz. pickers
7 thousand strong 12 inch heddles
1 Reed 1086 Splits on 115 inches, have it made, 20 Splits at each end of twice as heavy wire as the other, but of the same space between the wire as in the others. Put the driving pulley on the left hand side. Be careful and give us a large shade and be sure to ship the loom in six weeks as promised.

Yours respectfully,
Shuler & Benninghofen

Even in 1868
Quality was building a business

The business of Shuler and Benninghofen was founded back in 1858 by two young men, Asa Shuler and J. W. Benninghofen.

And, for a time, as in all young businesses, there was a struggle to make ends meet. Paper mills had their accepted sources of supplies so it was not always easy to "get in."

But mills who tried the Hamilton Felt began to come back for more. Soon other mills began to get in line, because of the reputation for quality which this new brand of felts was making. We now see Shuler and Benninghofen writing that they could not fill orders immediately, there were so many others ahead.

In going through the copy books of those periods we find also such letters as that above—orders for an additional loom, for more harnesses, shuttles, pickers, and other equipment needed in the mills.

Seventy-one years later, the descendants of those two men are still making the quality felts as did those pioneers back in 1858. But felts immeasurably better.

Why should they not be better, with all this additional experience to build into them.

For it is this experience that dictates the choice of the wools and the proper mixing of them, the method of combing and carding, of weaving and fulling that assure you of felts with all the qualities you want—long life, economical cost, large water removing qualities, and good production of good paper.

Try a single Hamilton Felt, put it to any test you think a felt ought to undergo. Compare it with the results you have been getting. Then you will use Hamilton Felts on all your machines.

Shuler & Benninghofen, Hamilton, Ohio

Miami Woolen Mills
ESTABLISHED 1858

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Hamilton Felts

Abitibi Jottings

The rate of operations at the various plants of the Abitibi Power and Paper Co. during the progress of negotiations regarding the price of newsprint was less than 75 per cent. With the reopening of the Fort William Paper Co., a couple of months ago, and the placing in operation of all four machines at the Sault Ste. Marie Division, it is stated officially that production has reached a rate of 90 per cent of capacity. On account of the larger demand from the United States that has developed in the past few months, it is anticipated that this rate is likely to be maintained during July and August.

The tug Reliance of the Abitibi Power and Paper Co. went on the rocks at the head of the rapids at Sault Ste. Marie last month, when her steering gear went wrong as she was approaching the Canadian locks down bound. She was in a perilous position for a time until released by tugs which went to her assistance.

George A. Fuller Co. of Canada has signed a contract for the construction of a new head office building in Toronto for the Abitibi Power and Paper Co. The plans call for a two-story and basement structure, 50 by 120 feet, of fireproof and stone-faced front construction, to cost approximately $200,000.

A large representation from the membership of the Toronto Club of Printing House Craftsmen enjoyed a pleasant outing in the Niagara Peninsula last month when, as the guests of T. A. Weldon, vice-president of Provincial Paper, Ltd., they were shown through a number of paper mills in the district and had demonstrated to them the intricacies of paper manufacture. Mills at Merritton and Thorold were visited and the visitors were shown the manufacture of coated, super-calendered, tissue, news and other grades of paper. A visit was also paid to the light-weight paper mill of the Interlake Tissue Mills at St. Catharine, in addition to the mills of Provincial Paper.

Waterous, Ltd., of Brantford, has purchased the plant and property of the Edmonton Iron Works, at Edmonton, Alta., and intends to alter and re-equip the factory. The alterations and improvements in contemplation will make this a $60,000 investment by the time they are completed.

William George Wilson, who for thirty years had been associated with S. J. Moore in his various companies, passed away recently in Toronto. For thirteen years he was manager of the Eastern Sales Book Co., New York, and for eleven years manager of the F. N. Burt Co., from which he retired three years ago.

Application has been made for probate of the will of the late E. A. Wallberg, former president of the Lake St. John Power and Paper Co. The will disposes of an estate of $4,198,000.

The J. B. Snowball Co., of Chatham, has been notified by the W. C. Pitfield Co., of Montreal, that the option it has held on the former company's mill property and Crown lands, at or near Chatham, will be taken up at maturity. This is taken to mean that International Pulp and Paper Co. is making this addition to its New Brunswick properties.

◆ NOVA SCOTIA ◆

Mersey Paper May Add Two Machines

From present indications, it is anticipated that the first newsprint machine in the mill now being constructed by the Mersey Paper Co. will be in operation in October next, with a capacity of 125 tons daily, and that the succeeding month will see the second machine, of similar capacity, in operation. A third machine will probably be added in 1930, bringing the total capacity of the mill to 375 tons daily.

An 8000-ton steamship is to be put into service between the mill and New York, and it is understood that the output

Cleaner felts than ever before

ONE paper concern recently found the answer to its felt washing problem. After trying other materials with varying results, the superintendent started using Oakite. Now he is getting "the cleanest felts ever put on the machines."

Felts washed the Oakite way are freed of every trace of dirt, sizing and other foreign matter. Left thoroughly clean, soft and absorbent they last longer because cleaning is needed less frequently. Valuable time and effort are saved, too. For Oakite speeds the work and makes complete rinsing faster and easier.

Call in our nearby Service Man and ask him to prove that Oakite will save you money and give you cleaner felts. You incur no obligation whatsoever.

Manufactured only by
OAKITE PRODUCTS, INC., 16 A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

Albany, N. Y.; Allentown, Pa.; *Atlanta, Altoona, Pa.; Baltimore, Battle Creek, Mich.; *Boston, Bridgeport, *Brooklyn, N. Y.; Buffalo, *Camden, N. J.; Charlotte, N. C.; Chattanooga, Tenn.; *Chicago, *Cincinnati, *Cleveland, *Columbus, O.; *Dallas, *Davenport, *Dayton, O.; Decatur, Ill., *Denver, Des Moines, *Detroit, Erie, Pa.; Fall River, Mass.; Flint, Mich.; Fresno, Cal.; *Grand Rapids, Mich.; Harrisburg, Pa.; Hartford, *Houston, Texas; *Indianapolis, *Jacksonville, Fla.; *Kansas City, Mo.; *Los Angeles, Louisville, Ky.; Madison, Wis.; *Memphis, Tenn.; *Milwaukee, *Minneapolis, *Moline, Ill.; *Montreal, Newark, N. J.; Newburgh, N. Y.; New Haven, *New York, *Omaha, Neb.; *Oakland, Cal.; *Oklahoma City, Okla., Oshkosh, Wis.; *Philadelphia, Phoenix, Ariz.; *Pittsburgh, Pleasantville, N. Y.; Portland, Me.; *Portland, Ore.; Poughkeepsie, N. Y.; Providence, Reading, Pa.; Richmond, Va.; *Rochester, N. Y.; Rockford, Ill.; *Rock Island, Sacramento, Cal.; *San Francisco, *Seattle, South Bend, Ind.; Springfield, Mass.; *St. Louis, St. Paul, Syracuse, N. Y.; *Toledo, *Toronto, Trenton, *Tulsa, Okla.; Utica, N. Y.; *Vancouver, B. C.; Williamsport, Pa., Wichita, Kans.; Worcester, Mass.

**Stocks of Oakite materials are carried in these cities.*

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

Invader Belting

Invader Belting is as old as is Republic (28 years). Invader will work satisfactorily anywhere, except, on abnormal drives calling for super quality such as is in Champion Hi Speed.

IF you first inquire into the actual service records of all brands of mechanical rubber goods you will eventually buy Republic. But it is only fair to mention that Republic's success in placing high grade merchandise on the market at competitive prices has been partly due to efficient distributor handling. And since an Industrial Supply Distributor can serve a consumer even more effectively in keeping down costs, it is suggested you use every facility he offers. Ask your distributor about Republic rubber.

THE REPUBLIC RUBBER CO.
Youngstown, Ohio

Belting - Packing - Hose
Molded Goods - Lathe Cut Goods

of the mill will be shipped to the New York Times under an arrangement by which the Kapuskasing mill, in which the New York Times is interested, will supply the "Mail and Empire" of Toronto, thus saving freight costs for both.

◆ BRITISH COLUMBIA ◆

The Royal Securities Corporation, of Montreal, which controls the British Columbia Pulp and Paper Co., is contemplating additional improvements to the two plants at Port Alice and Woodfibre. At the former plant, bleached pulp is manufactured and at the latter unbleached pulp. The enterprise formerly belonged to the Whalen Pulp and Paper Co., and was taken over by the present interests in 1925.

Another 500-ton pulp and paper mill is to be built in British Columbia. International Pulp and Paper Co., the largest paper company in the world is to build at Beaver Cove. Negotiations and investigations which have been in progress for years have come practically to a conclusion. A group of New York engineers representing International Paper has been at Beaver Cove, making preliminary surveys with respect to power development and a site for the mill. A direct capital outlay of between $15,000,000 and $20,000,000 will be required for the construction of the plant, development of power and purchase of timber.

Consolidated Mining and Smelting Co. and Powell River Co., the largest newsprint producer in Western Canada, is competing for the power concession at Lois River and Gordon Pasha Lake about 80 miles north of Vancouver. It is understood that the paper company has exhausted its power reserves as far as future expansion is concerned, hence the present application.

W. H. Altemus, of Orange, N. J., was a recent visitor to Prince George. He stated that a large pulp and paper mill is one of the developments which is promised in the near future for Kitimat, at the head of the Kitimat arm near Prince George. Steps are now being taken to consolidate the several individual timber holdings in the Kitimat and Kitsumgallum Valleys with a view to launching the mill project.

National Paper Box., Ltd., of Vancouver, has announced that it will enlarge its place at once to set up what practically amounts to an entirely new industry in British Columbia. R. E. Barker, president of the firm, while in Toronto for the international convention of paper box manufacturers, placed an order for $50,000 worth of automatic machinery for the manufacture of paper and paperboard specialties. The new line had previously been manufactured only in Eastern Canada and outside the Dominion, and the firm therefore expects to secure a good share of the prairie market, as well as local trade.

Marking another step towards the construction of a large pulp and paper mill at Port Mellon, on Howe Sound, the Vancouver Kraft Co., Ltd., has awarded a contract for the construction of the second unit of the project, which comprises a saw mill building, to cost about $25,000 for the building alone. The company is planning the expenditure of about $1,500,000 in the establishment of a lumber, pulp and paper plant to specialize in the manufacture of kraft paper for use as bags and wrapping paper.

Two Mills on Poplar Island

All major troubles in the way of establishment of a $3,000,000 pulp mill at New Westminster have been removed, according to information released in an interview with Mayor A. Wells Gray, M.L.A., immediately following his return from a visit to New York, Montreal and Ottawa in connec-

AIR IS MONEY!

Air in your plant, properly controlled, is as important as your machinery and the elements that enter into the manufacture of your product. With

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TRADE MARK REGISTERED

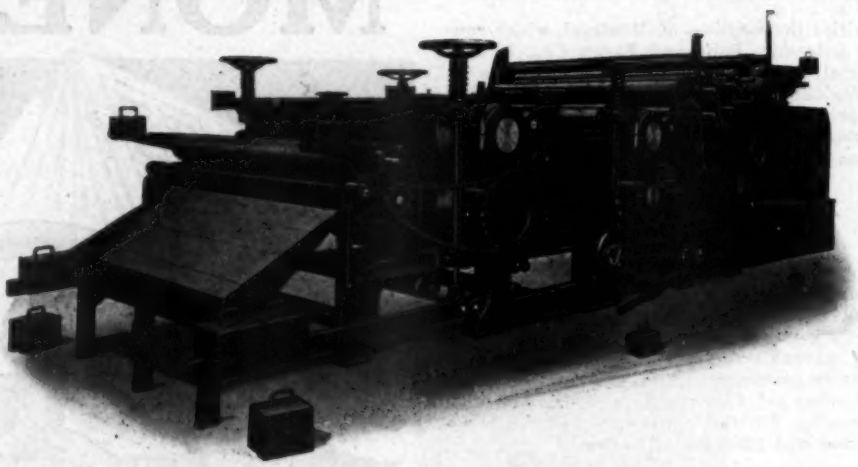
Fans suctioning out hot, humid air and drawing in cool, fresh, dry, outdoor air at a rate that provides your men with a cooling breeze and a lowered temperature, you'll find your help more efficient; you'll find less waste and fewer accidents; you'll find your plant and machinery in better condition; in a word, you'll find it not only humanitarian but also money in the firm's pocket to install really efficient ventilating equipment.

Meier Nu-air Fans are made entirely of aluminum—nothing to rust and not easily broken. The motors are special built, totally enclosed, of ball-bearing construction and of capacity more than sufficient to handle the job. The propellers are of the type used on huge planes and airships and will move more air at less cost than any other kind made. Meier Nu-air Fans are built in sizes up to 36-inches, as well as in stand or post-mounting models for spot cooling or accelerated drying.

Write us today for literature and prices

MEIER ELECTRIC & MACHINE CO. Inc. 1904
136 S. Meridian St. Indianapolis, Ind.

THE 1929 ROGERS WET MACHINE*



USING THREE OR TWO FELTS
GIVING 48% A.D. PULP IN SHEETS

*equipped with A. D. Wood Double Sealing Collars.

Keeping abreast of the times—

1. Longer rolls to save Felt edges.
2. Top press rolls in roller bearings to save Felts and Power.
3. Double Sealing Collars to save Felts, Power and Fibre.

And also—

New type easy acting clutch, bearings and journals of ample capacity, and interchangeable parts to save repairs. A well designed machine and worthy of investigation.

1929 Activities in the South include:—

NORTH CAROLINA	One Machine
TENNESSEE	One Machine
ALABAMA	One Machine

GLENS FALLS MACHINE WORKS

GLENS FALLS, N. Y.

E. K. MANSFIELD CO., 501 Fifth Ave., N. Y. C. **Eastern Representative**

tion with the project. Mayor Gray stated that preliminaries for the project are now completed, and that the articles of incorporation are being filed. The Atterbury interests, a well known family of New England and the old country, are heavily involved in the transaction, and are prepared to place $500,000 in the venture.

The plant will be located on 34 acres of property controlled by the British Timber Corporation, Ltd., through Howard T. Cole. This site is where the British-Canadian lumber mill was formerly located. There is admirable trackage and waterfront facilities.

Establishment of a second pulp and paper mill at New Westminster in the near future is likely as the result of the granting of an option on Poplar Island, in the Fraser River, to the New Westminster city council, which Mayor Wells negotiated during his visit to Ottawa. The council applied to the Dominion Government for this option, as it was felt that negotiations under way between the council and a party interested in construction of a pulp mill would be facilitated if possession of this island was secured. Under the terms of the option, the island can be purchased by the council during the year for the sum of $33,620. It is reported that European capital is behind the new project.

◆ NEW BRUNSWICK ◆

Fraser Building Two Mills

Excavation has been started on the pulp mill at Athol being erected by Fraser Companies of Edmundston. The structure will be two stories high, 200 by 400 feet, with concrete foundation and steel frame. E. G. M. Cape and Co., of Montreal, is the general contractor. The building will be completed by November 15. Steel work on the digester building is now going on.

The company also has in hand the development of a new sulphite mill at Campbellton, which, when completed, will go far towards rounding out the company's basic output and enable it to carry to a still further stage of completion expansion plans upon which it has been working for upwards of two years. The new mill will have the effect of largely increasing the company's pulp output and will enable it to create a surplus over and above its own requirements, at least part of which will be utilized by Rolland Paper Co. At present, the fine paper plant of the company at Madawaska, Me., is using the bulk of its output.

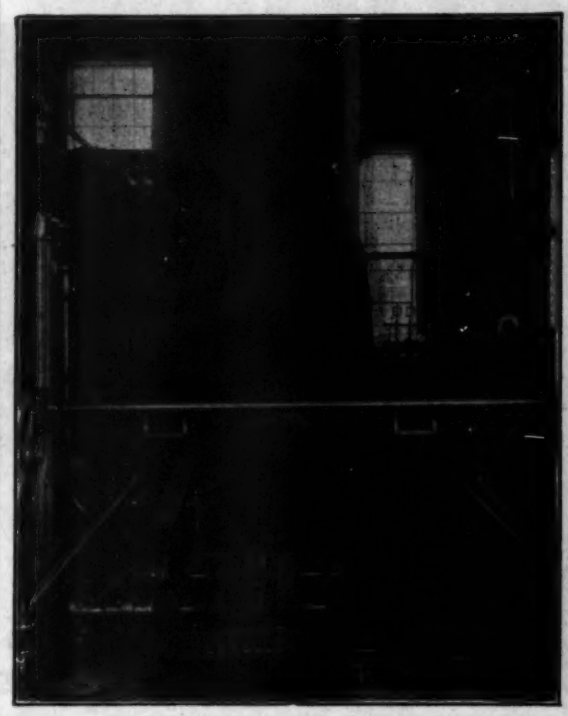
◆ ENGLAND ◆

Prospects for the Industry Satisfactory

Considerable impetus was given to the paper trade by the general election which has just taken place. The larger electorate caused an increase in the use of paper and print for electioneering purposes. Coated mills were particularly busy owing to the demand for art and chromo boards, and, through the timely action of the Envelope Makers' Association in impressing upon the election authorities the importance of using British-made envelopes, extra work was provided for a large number of hands in this section, and over a hundred million envelopes were specially made up, mostly with British paper.

General prospects in the industry are at the present time fairly satisfactory. Newsprint manufacturers are still working on full output. Continental and Canadian competition is seriously affecting the wood-pulp situation, and this material remains expensive. Conditions are fairly good in the wood-free section. Home demands continue to maintain a better level, and there has been a slight increase in overseas consumption. There has been a general agreement in the esparto section to increase prices by one farthing a pound; but, in spite of this, it is feared that some mills are losing on certain varieties which they produce, for this advance

PERFECT CONTROL



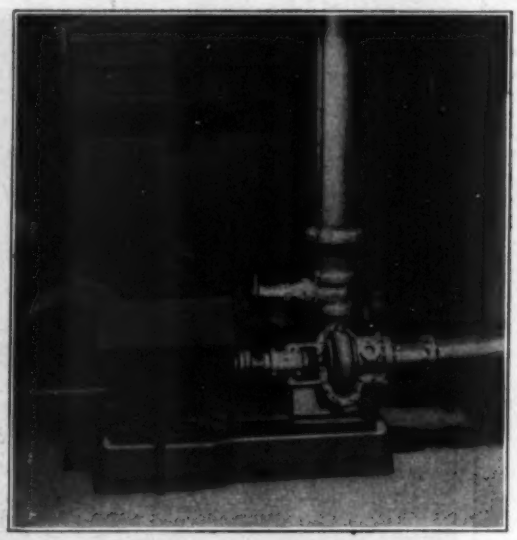
This giant Hamilton Corliss Steam Engine is under the absolute control of the LEWELLEN Variable Speed Transmission. By interposing the LEWELLEN between the crank shaft and governor shaft, the engine may be held at the precise speed desired, and may be varied instantly and accurately, to meet changing conditions.

The LEWELLEN Transmission is small in size and smaller in price, compared with the machinery it is usually called upon to control. It is not an expense, but a highly profitable investment, wherever variable speed control is of any importance. This is why the LEWELLEN is found today in every branch of industry, boosting production, and cutting costs, by saving waste of time and material. Write us for particulars regarding your own variable speed control problem.

LEWELLEN Variable Speed TRANSMISSION

Lewellen Manufacturing Co.
COLUMBUS, INDIANA

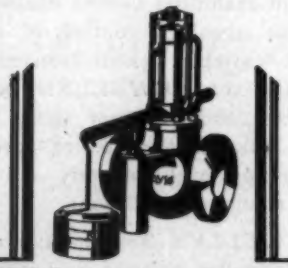
The Improved Paper Stock Pumps



10"x8" Type SSOR Pump Handling
5 to 5½ per cent Groundwood.

The improved paper stock pump offered to paper mills by Allis-Chalmers is successfully handling the heavier consistencies of paper stock. In a new mill where there are 11 Allis-Chalmers stock pumps installed the first unit was placed in operation without any trouble whatsoever being experienced with the stock pumps. Leaflet 2105 describing these pumps will be sent on request.

ALLIS-CHALMERS MANUFACTURING CO.
MILWAUKEE, WIS. U.S.A.



FIFTEEN YEARS IN CONSTANT SERVICE

without a cent for upkeep is the record of nearly 60 Davis Pressure Regulators in one industrial plant. That's dependability—a characteristic assured by the effective simplicity of Davis design. Whenever automatic pressure control is required Davis Valves are at your service.

G. M. DAVIS REGULATOR CO.
414 Milwaukee Avenue, Chicago, Illinois

DAVIS AUTOMATIC VALVE SPECIALTIES

PI7—Gray

POWELL VALVES

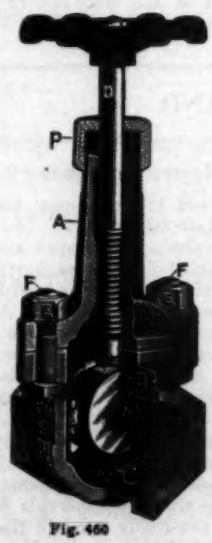


Fig. 460

IT is unnecessary to recount the virtues of Powell Valves to experienced engineers. Years of efficient, dependable performance have established their worth in every class of service.

Demands from every corner of the globe give an international reputation to Powell Valves.

The Wm. Powell Co.
2521-2531 Spring Grove Ave.
Cincinnati, Ohio

does not cover the increased cost of the grass and freightage.

There is an increased demand for fine paper both at home and abroad. The large producers, however, are getting most of the business. Prospects are considered to be good, and there seems every reason to believe that there will be a steadily increasing consumption in this section. Most of the wrapping mills are well supplied with orders, and prices remain steady. Imports of foreign wrappings have also increased, nevertheless, the output of British mills has increased.

Leaders in the trade are discussing a suggested scheme for a national papermaking emblem in the shape of a seal or poster stamp to be attached to samples of paper issued by paper merchants to printers, or by printers to their customers. One idea is to have two distinctive seals, one describing a paper as having been made by a British mill, and the other specifying the imported paper. The main aim of the scheme is to furnish increased employment for British papermakers.

Apropos last month's report on the use of immature paper, it is interesting to learn that one of the big Scottish mills is reported to have just finished the installation of a new papermaking machine which has an attachment that will artificially mature the paper, so that the owners can guarantee that all the paper made on this machine will leave the mill fully matured, and will lie perfectly flat without cockling.

Time-Worn Methods of Papermakers Criticized

Criticism is still rife with regard to the alleged apathy shown by the papermaker and merchant in this country towards advertising and scientific salesmanship. One member of the trade said recently: "We have arrived at a stage in the history of the paper trade when there is practically no method either in the sales departments or in that which has to do with advertising. The older method of marketing paper which answered very well a generation ago, appear to have broken down, and we have not yet evolved something new and more workable to take its place. As recently as twenty years ago, the papermakers looked to the big wholesale merchants to supply them with sufficient orders to keep their mills going and, apart from paying these big clients an occasional visit, the man in charge of the mill took very little interest in the actual selling of the paper, he was much too busily engaged looking after the making side of the business to have time to consider what actually became of the paper when it had once left the mill. He left this to his agent in London and to the wholesale merchants."

The present position was recently described by one in a prominent position in the trade as chaotic. The makers feel that something ought to be done, some fresh move made to get out of the unsatisfactory state of things into which the trade has drifted, but somehow or other they seem to be afraid to move and break away from old and time-honored customs. Some of them think they are not getting a fair deal from the wholesale merchants whose policy for many years has been to keep them entirely in the background, and by using their own watermarks and trade names, they have done this very effectively.

Discussing this situation, a paper specialist, writing to the Newspaper World says: Immediately after the war, when there was a restriction in the import of paper, and the output of British mills was not sufficient to meet the demand, there was a great outcry from the wholesale trade and the big consumers about the backwardness of British papermakers in not keeping up with the times, so as to provide for the legitimate demands of the consumers of the country. Urged by this outcry, the British makers started their big extension schemes, which have one by one during the last three or four years reached completion. Now the papermakers have the galling experience of watching the Board of Trade figures relating to the import of printing, writing, and wrapping papers, steadily increase month by month, and they themselves are without sufficient orders to keep all their new plant fully employed. They are now asking each other "What can we do to increase our sales?"

Wood's
CAST IRON
PULLEYS

of any weight or rim thickness for any service. Light weight pulleys for general transmission or big husky fellows for real downright hard work, and the right type for all jobs in between.

Let WOOD'S make it for you—for YOUR job—and it will be made right, delivered promptly, and the price will be no greater than you would have to pay for one that perhaps does not suit your conditions at all.

Solid
Split
Clamp Hub

Tight & Loose
Ball Bearing
Cork Insert

Step Cone
Taper Cone
Rubber Covered

Balance Wheels

Motor
Generator
Engine

Friction
Flanged
Web Center

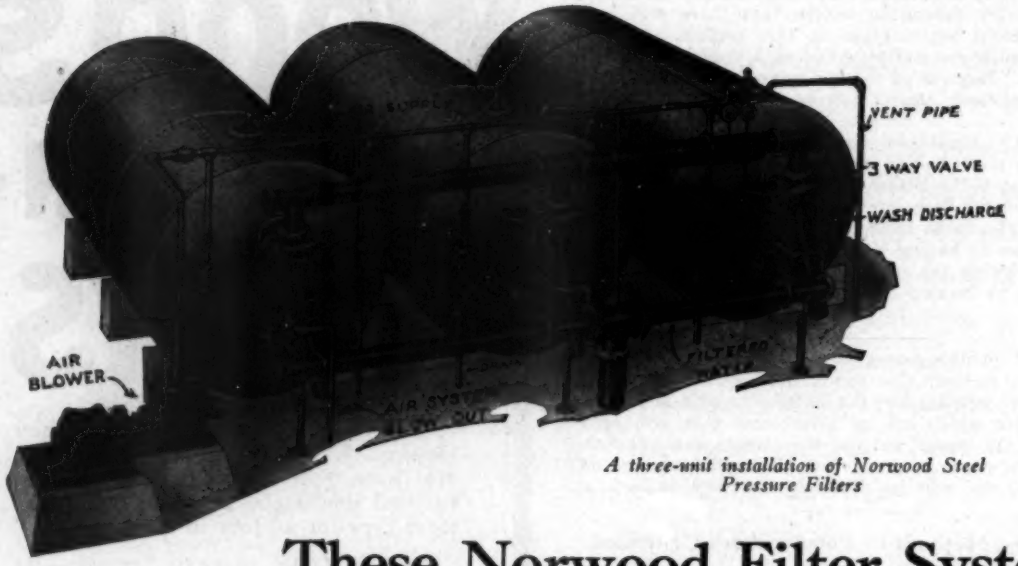
Mule
Guide
Conveyor

Fly Wheels

T. B. WOOD'S SONS COMPANY
Chambersburg, Penna.
Cambridge, Mass.—Greenville, S. C.

Write for Descriptive Catalog

DRIVE RIGHT



A three-unit installation of Norwood Steel Pressure Filters

These Norwood Filter Systems Will Save You Money!

A typical installation of Norwood Gravity Filters in a Paper Mill

NORWOOD'S three-unit filtration systems are saving money in many other mills and they will actually save money for you too. With Norwood's three-unit systems, either pressure or gravity type, water can be taken into your plant directly from your river or stream and be perfectly filtered to remove pollution and foreign matter. Automatic chemical treatment can be added to remove color and objectionable chemical content; and maintenance and operating costs will be so low as to be negligible, for one single hand wheel replaces the many complicated operating contraptions found on some systems.

Norwood filters save money by improving paper quality, and cutting down the proportion of "seconds". Continuous, dependable operation is possible because one unit can be washed while the other two units continue operation. Catalogs and full information upon request.

Norwood Engineering Co., Florence, Mass.

You can't go wrong with a Norwood installation of Filters, Calenders, Platers, Dusters, Rag Thrashers, Folding Machines, Suction Boxes or other equipment. Ask for catalogs and specifications.

NORWOOD

. . . The makers must, however, come out into the daylight. It is safe to say that millions of pounds have within the last few years been spent in making the British paper mills second to none in the world. In one mill alone in Kent over £500,000 has been spent in this way, but what do the general paper consumers know about this? Practically nothing. In no other country would the makers keep so silent about the big things which they have done and are able to do.

The erection and installation of new plant for the manufacture of esparto pulp at the Northfleet paper mills is almost completed, and when this plant comes into operation, these mills will be among the most up-to-date in the world. Nearly every process is performed by mechanical means.

Imports and Exports

Below are set out the values of the various paper trade imports and exports during May together with the increases or decreases as compared with the corresponding month of the two preceding years:

IMPORTS

	May, 1929.	Inc. (+) or Dec. (—) as compared with 1928.	Inc. (+) or Dec. (—) as compared wiht 1927.
Paper-making Materials...	1,449,406	+563,546	+141,947
Paper and Cardboard.....	1,566,005	+91,923	+281,167

Quantities of the same articles imported:

	May, 1927.	May, 1928.	May, 1929.
Wood pulp, tons.....	128,006	97,274	166,411
Paper, cwt.	1,331,288	1,614,704	1,790,406

EXPORTS

	May, 1929.	Inc. (+) or Dec. (—) as compared with 1928.	Inc. (+) or Dec. (—) as compared wiht 1927.
Paper-making Materials....	172,618	+38,766	+38,541
Paper and Cardboard.....	985,645	+141,051	+226,631

Quantities of the same materials exported:

	May, 1927.	May, 1928.	May, 1929.
Paper-making mater'ls, tons	16,876	18,343	21,846
Paper & cardboard, cwt.....	379,567	436,765	

❖ NORTHERN NEW YORK ❖

Purchase of a tract of property bordering the St. Lawrence River at Morristown for use as a pulpwood terminal by Dr. James E. Campbell of Watertown from Rev. H. J. Martin of Ogdensburg was recently announced by Rev. Martin. The purchase price was $12,000. It is understood that Dr. Campbell is acting for the Dexter Sulphite Co. of Dexter and the Sherman Paper Co. of Watertown. When the terminal is completed the wood will be taken from boats and shipped by rail to Watertown and Dexter mills.

The Moyer & Pratt, Inc., paper mill at Lyonsdale was swept by a disastrous fire on June 8. Officials of the mill estimated the loss at between $75,000 and $100,000. The flames badly damaged the machine room and the finishing room. Two valuable paper machines were damaged and a quantity of paper in the finishing room was ruined. The fire originated over one of the paper machines. It spread rapidly and the mill fire fighters found it difficult to fight, it was finally subdued after being reinforced by the Port Leyden and Lyons Falls fire departments. The origin of the blaze is not known. The Moyer & Pratt mill is located on the Moose river. It produces about 24 tons of white and manila tissue paper per day.

George Pomroy, superintendent of the Warren Parchment Co. mill at Dexter for the past three years, has resigned to accept a position in a paper mill at Newberg, N. Y.

The New York State Conservation Department during the spring planting season distributed 20,391,280 trees for plant-

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

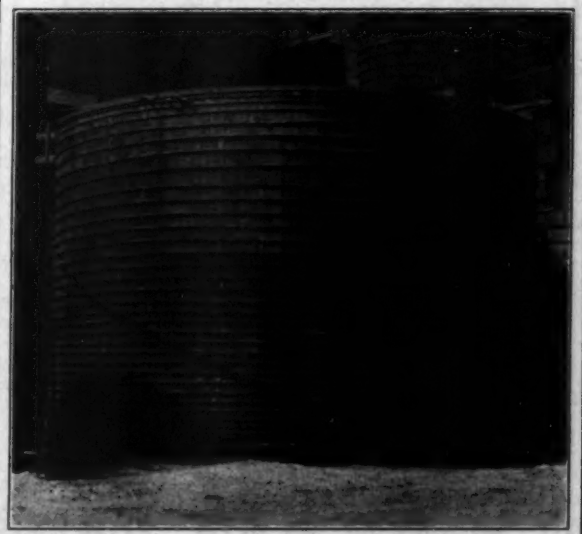
Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

WOOD TANKS TILE

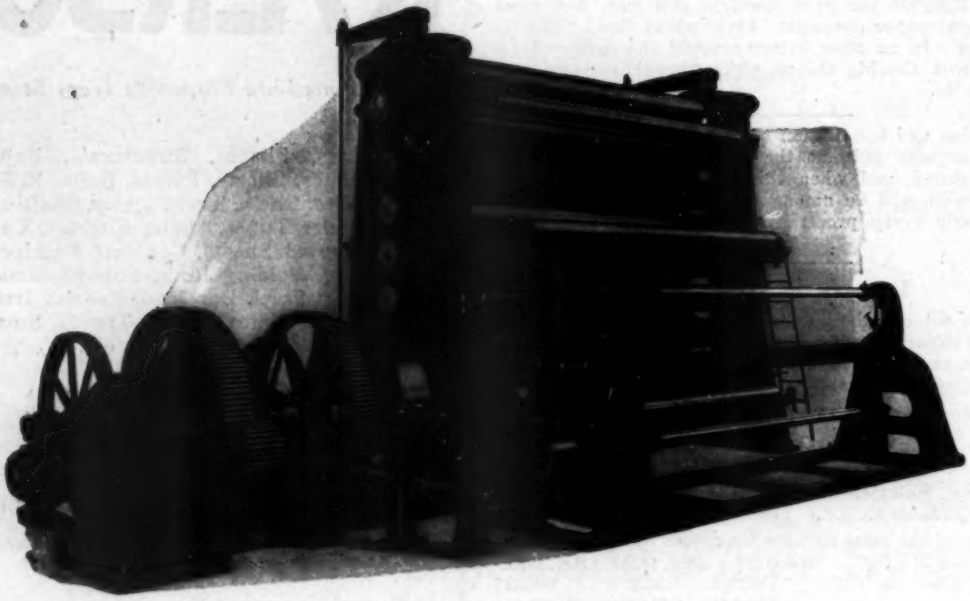


Blow Pit and Vomit Stack at Marathon Paper Company Mill

NO TANK is too large and none too small for our tank-making equipment and stocks. We cater to the needs of the paper industry. Blow Pits, Vomit Stacks, Stock Tanks, Acid Storage Tanks, Stuff Chests, Agitators, etc. See our Condensed Catalog in Paper and Pulp Mill Catalog. Ask us about our Glazed Tile Tanks.

Tank Builders Since 1867

KALAMAZOO TANK AND SILO CO.
KALAMAZOO, MICHIGAN



LEADERSHIP

NOT written to please, but to state the reason why HOLYOKE MACHINE and LEADERSHIP mean the same thing to the experienced operator and buyer of Wood Pulp and Paper Mill Machinery. Constant improvements in stride with the times and in keeping with good mill practice, plus an unwavering standard of high quality account for the LEADERSHIP OF HOLYOKE.

When planning on new equipment or replacements write HOLYOKE Engineers, HOLYOKE Machine Co., HOLYOKE, Mass.

Manufacturers of Super-Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

ing in 3,231 reforesting projects. In the National Forest Preserve, 20 new plantations were made and eleven were made in State Parks. Sixteen industries made plantations, the largest being 1,250,000 trees planted by the Northern New York Utilities, Inc.

❖ NEW YORK CITY ❖

Allan & Gray Move

Allan & Gray, paper merchants of long standing and wide repute in New York City, are comfortably settled in their new location at 30-32 West Fifteenth street after their recent removal from their old quarters at 54 Beekman street, where they were located for almost a quarter of a century. The new home of the concern is up-to-date in every particular, and is centrally situated closely adjacent to the main transportation arteries and in the midst of the mid-town business district. The street floor, the basement and half of the second floor are occupied. The basement is utilized for the storing of cased paper; on the ground floor is the reception office and display room, the sales office, and a large stock room equipped with the latest steel shelving, while the business and executives' offices are on the second floor.

Allan & Gray was founded in 1907 by Bert R. Gray and the late George H. Allan. The present proprietors are William T. Black, who entered the firm in 1920, and Ralph H. Fales, Mr. Gray having retired the first of this year. The company makes a specialty of fine papers.

Lewis Jennings, who recently resigned as manager of the New York branch of E. Butterworth & Co., Inc., after having been associated with that organization for 35 years, has formed the firm of Lewis Jennings, Inc., with offices at 220 Fifth avenue, New York. The new firm will import and deal in all grades of foreign and domestic new and old papermaking rags, flax waste, old rope, bagging and other papermakers' materials. Mr. Jennings is treasurer and general manager of the new corporation.

The Champion Coated Paper Co., has leased space in the new New York Central Building at 230 Park avenue, New York, and will shortly remove its New York City branch offices from 2 Lafayette street to the new location.

The Richter Card & Paper Co., Inc., among the prominent paper jobbers in New York specializing in cardboard and distinctive announcement papers, has moved from 48 Beekman street directly across the street to 51 Beekman street, where it is provided with larger quarters.

Bartlett Arkell, president of the Arkell Safety Bag Company, Inc., with offices in the Equitable Building, 120 Broadway, New York, will soon join the trend to uptown offices, new quarters having been secured for offices on the thirty-first floor of the new building at 10 East Fortieth street.

William Steck, widely known dealer in and importer of paper manufacturers' supplies, of William Steck & Co., Inc., 15 Park Row, New York, is making an extensive tour of the western coast of the United States and Canada, accompanied by Mrs. Steck. They will visit California, Tia Juana in Mexico, Seattle, Spokane and Vancouver and other points in British Columbia, and, incidentally, Mr. Steck attended the convention of Shriners in Los Angeles as a delagate of his lodge.

The New York City office of the Bermingham & Prosser Co., paper merchants and mill representatives, is now located at 10 East Fortieth street, with James F. Walsh in charge.

The Seaman Paper Company, paper mill representatives and extensive distributors of paper of various kinds, has leased space in the new Chanin Building, at Lexington avenue and Forty-second street, New York, and will shortly

HUM-MER *Electric*

CHIP SCREEN

HERE are the features which make the Wood Chip Hum-mer a profitable investment for pulp and paper mills:

Immense capacity!

Thoroughly removes sawdust and fine particles!

Small floor space required!

Low power consumption!

Fully adjustable screening angle and vibration!

No lubrication!

No destructive shaking of supports or buildings!

No belts or pulleys!

Trouble-free operation!

Write for Catalogue 54-P

The W. S. TYLER *Company*

Manufacturers of Woven Wire Screens and Screening Equipment

TYLER

FOURDRINIER
CYLINDER
CORDUROY

WIRES

Less power is needed to drive this Flat Box Pump

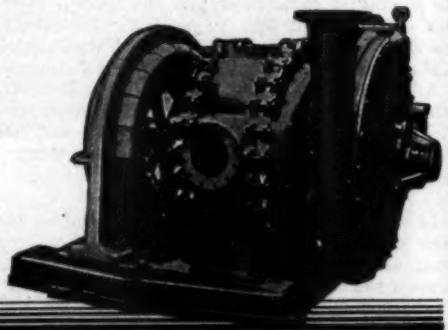
UNVARYING suction must be maintained on flat boxes. This is difficult with the usual type of vacuum pump when water must be handled.

The Jennings Flat Box Pump overcomes this difficulty with two separate units combined in one casing. The Hytor air pump handles air only, while the centrifugal water impeller takes care of the water. Economical performance is the result.

Besides, direct connection with a synchronous motor eliminates transmission power losses that occur in gears, chains and belts. Send for descriptive bulletins.

JENNINGS
FLAT BOX PUMP

Capacities from 150 to 5000 g.p.m. of water together with 80 to 2300 cu. ft. per min. of air at 10 in. vacuum.



Jennings Pumps

THE NASH ENGINEERING CO. 161 WILSON ROAD SOUTH NORWALK CONN.

Lindsay Spiral Weave Fourdrinier Wires

(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company

Collinwood Station CLEVELAND, OHIO

move its New York offices from 200 Fifth avenue to the new location. The space taken is on the fourth and ninth floors. The home offices of the company are in Chicago.

The Brookside Card and Paper Co., Inc., is the name of a new concern just organized in this city and incorporated under New York State Laws to deal in paper. Quarters have been secured at 104 Suffolk street, New York. Herman Fuchs is president of the new company, and Irving Ebbin is vice president.

Alexander H. Twombly

Alexander Hamilton Twombly, the engineer who built Camp Shelby at Hattiesburg, Miss., and president of the St. Louis Coke & Chemical Company, died on June 27 at his home in Summit, N. J., after a long illness.

At one time Mr. Twombly was associated with S. D. Warren & Co., paper manufacturers, at their water power plant at Gardiner, Me., of which he was in charge, and for many years was superintendent of their Yarmouth Pulp Mills. While living there he was a trustee of the North Yarmouth Academy and of the Yarmouth Public Library. He also had been associated with the engineering firm of Westinghouse, Church, Kerr & Co., of New York. Later he rose from engineer with the St. Louis Coke & Chemical Company to president. He was in charge of construction of its St. Louis plant.

F. H. Luning, dealer in paper mill supplies, has removed his offices from Brooklyn to the new Pennsylvania Terminal Building at 370 Seventh avenue, New York.

The Forbes Paper Co, mill representatives, has moved from 32 Laight street to its new building at 362-364 Broadway, New York, where much more room in a more centrally located district is provided.

The Ace Paper Co., of New York City, was awarded articles of incorporation at Albany, N. Y., recently to conduct a general merchandising business in paper. The new corporation is capitalized at $100,000 of preferred stock and 1,100 shares of common stock, and is represented by Feigin & Feigin, of 291 Broadway, New York.

◆ NEW ENGLAND ◆

Effect of Proposed Rate Revision Explained

The four chief independent newsprint mills of New England, Great Northern Pejepscot, St. Croix and Cushnoc Paper Companies are working together to do all within their power to prevent application of proposed mileage scale rates on newsprint from Maine to their chief markets and have a counter proposal of their own based on a sixth class rate.

A very sombre picture was drawn by F. Manley Ives, counsel for the New England Paper & Pulp Traffic Association, of the possibilities should the proposed rate revisions of Examiner Hosmer be placed in effect. Mr. Ives points out that under the existing arrangement and the one by which New England industries have grown to factors of consequence in the country's business, New England is treated as one group in making rates between this district and central and trunk line territories. In the case of C. F. A. territory, all of New England except the northeast portion, is grouped with Eastern New York in the making of rates. The change from the group system to distance scales as proposed not only creates heavy increases to the New England mills, but creates drastic differences where none now exist.

Mr. Ives after describing the highly competitive nature of the paper business adds that if the I. C. C. insists that class rates interterritorially be placed on a distance scale, the New England Paper & Pulp, Traffic Association urges that printing and wrapping paper must be excepted and that the carriers be instructed to publish the rates as they now exist as commodity tariffs. Fairness and justice demand lower rates than

SCOFIELD FELT CONDITIONER

The Scofield Felt Conditioner is a device designed to meet the needs of the paper industry. It is the result of years of concentrated study of the requirements. Its performance is guaranteed.

A dirty felt is a liability; a clean felt is an asset.

With the Scofield Conditioner you can keep your felts clean continuously. Dirty streaks and spots can be removed quickly and efficiently.

Many mills are using this method of felt conditioning. It is being used on machines making all grades of paper from tissues to boxboard.

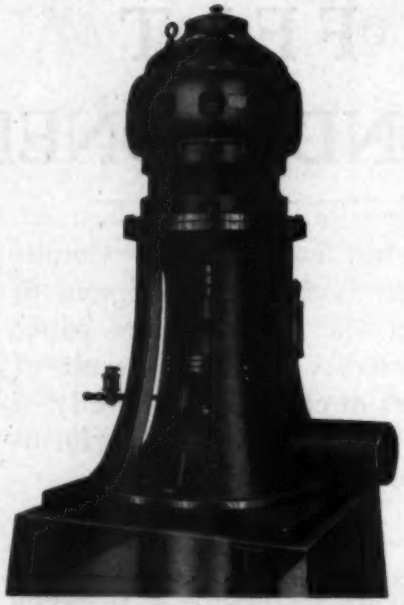
Give us an opportunity to review your felt trouble.

We will gladly send you complete particulars upon request.

GILBERT J. SCOFIELD COMPANY, INC.

408 No. Pearl St.
ALBANY, N. Y.

LAYNE
VERTICAL TURBINE PUMPS



Every manufacturer, whether he makes paper or pumps, has two policies to choose from. He must conform his product to meet a price or build up to a set standard of quality.

Layne chose the latter policy and has adhered to it from the very beginning.

You know what quality means in watches or shoes —it is equally important in pumps, and only in Layne will you find the many superior points that assure economical and dependable service over a period of years.

Every paper manufacturer should have our catalog—send for yours.

Layne & Bowler, Inc.

MEMPHIS TENN.

Instruments for Calipering, Weighing and Testing Paper and Box Board:

Automatic Micrometer Calipers
Automatic Board Scales
Automatic Tissue Scales
Automatic Paper Scales
Automatic Felt Scales
Electric Board and Paper Testers (Automatic)

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549 W. Washington Blvd., Chicago, Ill.

Remove that friction brake

Install Daniel's P.P.P.—the rod packing with the automatic adjustment that bears lightly on the moving rod. It will keep cylinders tight at all pressures and temperatures.

Prove it at our expense. We will gladly send samples for test.

QUAKER CITY RUBBER CO.

Manufacturers of Mechanical Rubber Goods

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Branches: New York Chicago Pittsburgh San Francisco

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COMMERCIAL ALUM — CMC — IRON FREE ALUM

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MARIS Overhead Electric Cranes
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THE JOHNSON FRICTION CLUTCH
WRITE FOR CATALOG "P.I.-7"

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

the distance scale proposed according to Mr. Ives. He also protests strongly against the increases on rates within New England adding that "it is the very acme of irony that New England in order to have thrust upon it this scale of distance rates which it does not want and protests with all the vigor at its command, must likewise be faced with these terrific increases in intra New England rates."

Mills Show Profitable Production

A refreshing bit of news to chronicle at this time with overproduction so widely complained of in the newsprint division of the paper industry is the action of directors of the St. Croix Paper Co., at their annual meeting held in Boston June 28 when they increased the annual dividend rate to $8 from $7 by voting for a quarterly $2 disbursement instead of the usual $1.75. It is payable July 15th to stock of record July 6. Two years ago this same company paid a stock dividend. St. Croix makes nothing but newsprint at its Woodland, Me. mills and has an output of about 125-150 tons daily, a considerable portion of which is used by Boston dailies.

In the meantime, the Cushnoc Paper Co., has embarked on an ambitious expansion program and its production is also practically all newsprint. Located at Augusta, Me., several years out of receivership, this company has since gone forward with great strides. It is spending $75,000 on an addition and will then install Jenssen acid towers system at its sulphite mill and another digester bringing the total to five digesters. It is expected that these additions will increase the output 25 per cent daily. It is at present operating full time making 140 tons of news daily. Although this is a moderate program, it shows nevertheless that "Kennebec" standard newsprint, which is the company's trade name for its product, has been marketed satisfactorily and coupled with the action of the St. Croix directors is quite conclusive evidence that New England mills can hold their own despite the huge production across the line and the desperate marketing efforts of some mills.

It might be added that the Great Northern Paper Co. maintains every machine in operation at its three mills at Millinocket, East Millinocket and Madison. At the latter plant, it will shortly start the production of some sulphite papers as it has the pulp for that purpose handy and recently acquired an adjacent plant of the American Woolen Co., with that end in view.

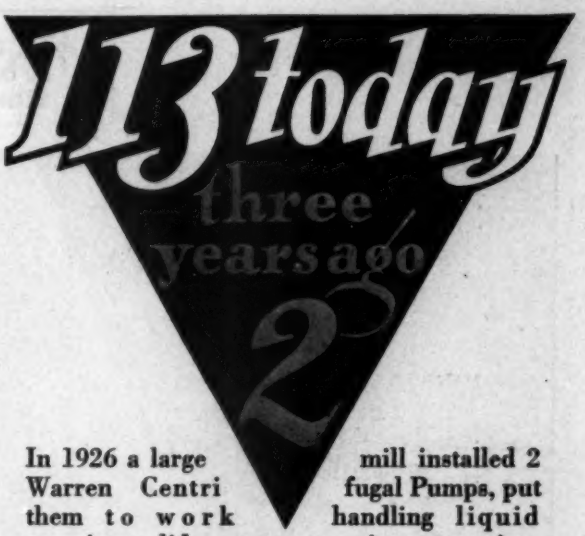
Heavy shipments of pulpwood are being made this summer from the maritime provinces of Canada to Portland. The Hollingsworth & Whitney Co., alone has four large steamers chartered for the summer and they are dispatched with the usmost speed. The wood moves by Maine Central from two plants at Portland to the mills. S. D. Warren Co., Oxford Paper Co., and International Paper Co., are also receiving wood at Portland.

Heavy imports of wood pulp are recorded during the past few weeks both at Portland, Me., and Boston. Vessels known to be on the way here from Scandinavian ports indicate that July may be a record month for arrivals particularly at the Maine port. There are at least seven vessels on the seas bound for Portland with full cargoes of pulp, besides three three in port.

Warren Mill to Make Containers

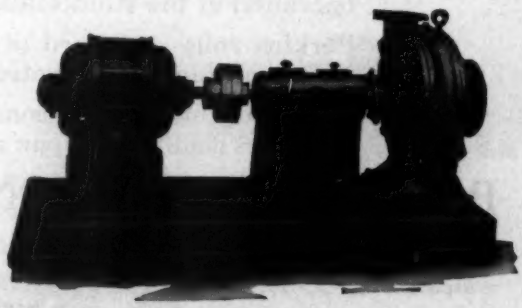
So far, the Forest Paper Co. has not made any board or fiber containers, but active promotion of the enterprise which centers around the old soda pulp mill of the S. D. Warren Co., at Yarmouth, Me., continues. The S. D. Warren Co., sold the plant to a group of men who contemplate re-equiping the plant for the manufacture of paper board and an additional converting establishment for the production of fiber and corrugated shipping cases. Joseph Warren, mill manager of the S. D. Warren Co., is among the men identified with the new company. Two drying machines for soda pulp to which wet ends for the manufacture of board will probably be added, are contemplated.

It is stated that over 12 million of these shipping containers



In 1926 a large mill installed 2 Warren Centrifugal Pumps, put them to work handling liquid carrying solid matter in suspension. Their dependable service and economical operation brought continued repeat orders . . . 113 Warren Pumps are now in daily operation in this and other mills operated by the same company.

The experience of this mill is typical of many other plants that have placed repeat orders for 1 to 65 pumps as a result of the performance of their first Warren Pumps. Improved design and construction, not found in other pumps, are responsible for the sustained high efficiencies, low operating and maintenance costs. Send for Bulletins giving complete information.



Warren Stuff Pumps handle 6% clean stock efficiently, without clogging

Warren
Steam Pump Company Inc.
Warren Massachusetts

Atlanta Boston Charlotte Cleveland Dallas Kansas City St. Paul New Orleans New York Oklahoma City Philadelphia Pittsburgh San Francisco Toronto Scranton Seattle St. Louis

JW5

No CALENDER *can be better than the* ROLLS *in it*

Perkins Web-Supercalenders

For greater and better glassine production

Here is a typical Perkins installation, showing 44″ and 72″—14-Roll Glassine Web Supercalenders. These calenders are in operation at the Rhinelander Paper Co., Rhinelander, Wis.

Perkins rolls—standard of the paper industry—in Perkins finishing machinery guarantee efficient and steady production.

Complete information concerning these and all other Perkins machines gladly sent upon request.

B. F. PERKINS & SON, INC., HOLYOKE, MASS.

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TRADE MARK REG. U.S. PAT. OFF.

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Paper Rolls
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Embossing Calenders
Sheet Calenders
Platers
Mullen Paper Testers

Tensile Testers
Ventilating Fans
Rag Cutters
Stock Cutters
Paper Dampeners
Bleach Ejectors

are used by Maine manufacturers annually and it is the intention of this concern to obtain a very substantial proportion of this business. At present, the promoters are still engaged in development work connected with the raising of sufficient funds for equipment and other initial construction that may be necessary.

Two Ross-Briner economizers have been installed and are now efficiently operating in the big mill of the Great Northern Paper Co. at Millinocket, Me. These machines were built by Rice Barton & Fales Co., of Worcester, Mass., and replace two of the older fourdriniers at this company's mill.

The exact nature of the product which will be produced at the Great Northern Paper Co.'s recently acquired mill at Madison, Me., has not been announced. The company is at present producing some sulphite specialties there and when the woolen machinery is entirely removed the necessary converting machinery will be installed.

Another company purchasing provincial pulpwood this year is the Parker Young Co., of Lincoln, N. H. It has contracted for 25,000 cords of wood in Nova Scotia which will be shipped by boat to Portland and then via the Boston & Maine R. R. to Lincoln. The plant of the Boothby Co., at Lincoln, Me., which will utilize groundwood pulp made by the Parker Young Co., is about ready for production. The Boothby Co. will produce molded pie plates, but has a program for the manufacture of a varied line of pulp products in addition to this.

To distributors and the trade in general, probably the biggest piece of news from New England this month is the withdrawal of the Strathmore Paper Co., from the Linweave Announcement Association and the definite establishing of a large line of wedding and business announcements by the Strathmore company which will be converted at the Old Colony plant in Westfield. As is generally known, Old Colony is engaged in a comprehensive program of improvements which includes a new manufacturing plant as well as a new office building. This will enable it to take care of not only the announcements of Strathmore, but also the manufacture of envelopes for the entire Strathmore line, formerly made in large part by the U. S. Envelope Co. It is understood that there will be some 25,000 lines of Old Colony envelopes all told and of these each merchant will be permitted to stock any variey which he chooses, but it is logical that the distributors will select for stocking envelopes to match the flat stock lines they already have. In so far as the wedding and business announcements are concerned, Carter Rice & Co., Corp., of Boston, has been appointed exclusive New England agent.

Harry Riggs formerly advertising manager for Linweave Asociation and Oliver Richmond field representative for the same organization have accepted similar positions with the Strathmore company.

Andrew P. Lane will represent Cuchnoc Paper Co., Pejepscot Paper Co., St. Croix Paper Co., and Great Northern Paper Co., at the hearing to be held before the I. C. C., at Bluff Point, N. Y. on Lake Champlain, July 22. There will be rebuttal testimony at this time and cross examination of witnesses with New England apparently stacked against the carriers and shippers elsewhere.

A most beautiful exhibit of offset printing is on exhibition in the executive office of Storrs & Bement Co., Boston paper merchants. It was furnished by the Becket Paper Co., and is reproduced on Beckett offset.

There are 606 pages in the brief submitted by defendants Kalamazoo Vegetable Parchment Co., and Patterson Parchment Paper Co., who are appealing the decision against them in the Federal District Court at Boston, Mass. This involves an action under the anti-trust laws by which the Story Parchment Co., of Trenton, Mich. is suing the defendants for

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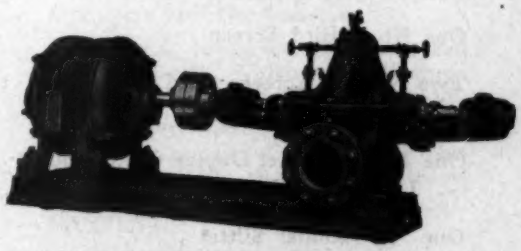
PUMPS
THAT KEEP PRODUCTION UP
AND UPKEEP DOWN



LAWRENCE "VORTEX" is the answer

LAWRENCE "VORTEX" PUMPS are giving day-in ——day-out performance in numerous pulp and paper mills, handling all types of liquids and thick stock. The outstanding features are:—DURABILITY — ACCESSIBILITY — RELIABILITY.

These are the vital factors that eliminate pump troubles.

There is a LAWRENCE "VORTEX" pump for every service in the paper industry. It will pay you to investigate and standardize on the "VORTEX".

Write for recommendations and bulletins.

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AT LAST WE CAN OFFER THE JAGENBERG, DUSSELDORF, GERMANY, ROTARY ROLL WRAPPING MACHINE for shell packing for the protection of mill rolls. Damage during transit impossible; cheaper than crate packing; insuring delivery of your rolls to the Eastern or foreign market in perfect condition. Full particulars upon request.

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Paper and Pulp Mill Brokers

261 Broadway, New York City

OUR MOTTO—"Service First"

FOR SALE

480 Volt Turbines

1—3200 KW. Allis-Chalmers Generator, 80% P.F., 3600 R.P.M., 3 phase, 60 cycle, d.c. to Parsons Turbine operating 200 lb. pressure, condensing Wheeler Surface Condenser.

2—1500 KW. Allis-Chalmers Generator, 80% P.F., 3600 R.P.M., 3 phase, 60 cycle, d.c. to Parsons Turbine operating 200 lb. pressure, condensing Wheeler Surface Condenser.

Zaremba Evaporator

1—Quadruple effect with pumps.

Technical Economist Corp.
122 East 42nd Street, New York, N. Y.

Paper Mill Machinery

One No. 2 Bird Screen

Two Walpole Screens used only two years

One 156" Hamblet Duplex Cutter and Layboy, used very little

One 72" Kidder Slitter

One 130" M. & W. four drum Winder

One 134" P. & J. Uniform Speed Reel

One 76" S. & W. Under cut cutter

Two 69" S. & W. Under cut cutters

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FRANK H. DAVIS COMPANY
175 Richdale Avenue, CAMBRIDGE, MASS.

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Hard maple and gum wood press rolls
Brass tube rolls
Bronze couch and breast rolls
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Copper covered felt rolls
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White wood felt rolls
Iron cores for rubber covered press and felt rolls
Bronze suction box covers
Hercules car movers

All rolls balanced

We would be very glad to submit information and quotations on all products. Just drop us a card.

J. W. Hewitt Machine Company
Paper Mill Machinery
Neenah Wisconsin

WANTED—Paper Mill Machinery Salesman; preferably a man with Engineering and paper mill training. State age—qualifications—references—etc. All communications will be kept strictly confidential. Downingtown Mfg. Co., Downingtown, Pa.

WANTED—Paper Mill Superintendent; must be experienced, and competent to take complete charge of new mill making news. Give full particulars. Address Box 153, The Paper Industry.

WANTED—Position as assistant supt. or boss machine tender, by executive of long experience in making high grade book or bleached sulphite papers. South or West preferred. At liberty July first. Address Box 160, The Paper Industry.

WANTED—Engineer Draftsman, experienced in the design of structures and equipment layout for paper and pulp mills. State age, education, experience, married or single, salary required, and references in first letter. Position is permanent. Address Box 161, The Paper Industry.

WANTED—Mechanical Engineer Draftsman—thoroughly experienced in the development and design of automatic machinery. Must be engineering graduate with ingenuity and vision. State age, education, experience, married or single, salary required and references in first letter. Position is permanent. Address Box 162, The Paper Industry.

WANTED—Engineer with knowledge of paper and pulp mill process. Must be of the executive type with ability to handle the development and planning of an entire project. This position can be filled by either a Chemical, Mechanical, or Civil Engineer and will be permanent. A man with ability to visualize and plan the process in terms of equipment, machinery and buildings, is required. We can offer exceptional opportunities to the Engineer with the right personality, ability, and experience. Address Box 163, The Paper Industry.

SALESMEN—Large and old company wants men to sell conveying equipment to Paper and Pulp Mills. Must have wide acquaintance, complete familiarity with the engineering requirements of such work and a proven good sales record. For such a man there is an exceptional opportunity. Give salary expected and complete details in reply or no attention paid. Address Box 164, The Paper Industry.

alleged breaking of prices on vegetable parchment paper for the purpose of driving the plaintiff out of business. The case is now in the hands of the Circuit Court on appeal. Damages assessed are $195,000 plus $27,500 attorney's fees.

At Holyoke a most optimistic report has been issued by the Real Estate Board. Many vacant manufacturing properties have been taken over by paper companies and the board reports that the seasonal decline in the paper industry will be of less consequence than in many years. This coincides with the report generally prevalent in the Paper City that the fine paper mills of that city have produced more rag content paper during the first half of 1929 than for any similar six-month period since the war.

Lawless Bros. Paper Mills, East Rochester, N. Y., has established a permanent representative in Boston.

Discussing the power situation in Maine, it was recently brought out that the Insull interests which have purchased control of the Central Maine Power Co., have invested heavily in several leading industries among others the Cushnoc Paper Co., Augusta, Me., and the Keyes Fibre Co., Shawmut, Me., which it is alleged are now controlled by them.

George H. Sweetnam, paper merchant, has filed plans for the construction of a one-story paper converting plant in Cambridge, Mass., to be 50 by 150 and will cost $60,000 with equipment.

The 72-inch board machine of the Tidewater Paper Mills at Norwich, Conn., has been sold through Gibbs Brower Co., Inc., of New York and will be completely reconditioned before installation in its new location.

The Sinclair Co., of Holyoke, has been incorporated in Massachusetts with $50,000, to deal in and handle paper mill machinery. Peter S. Sinclair is named as president and treasurer.

The National Paper Products Corp., of Boston, with $100,000 capital stock has been chartered in Boston. George Sherman, of Brookline, Mass., is president and treasurer.

Regular sailings are being maintained by the International Paper Co.'s steamers sailing from Corner Brook, Newfoundland, to Atlantic ports including calls at Boston. Newsprint is delivered at all these points. The only pulpwood that is being shipped to Boston these days is the shipments brought down from New Brunswick by the International Paper Co., for its mill at Turners Falls, Mass.

Eastern Studies Cost Reduction

Cost reduction has been studied in all its phases by the Eastern Manufacturing Co., of Bangor, with an eye to improvement of product and a reduction of operating expense. Since the adoption of a well-defined policy, small runs of paper which increase cost have been avoided by adding to the

POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

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STEEL PLATE CONSTRUCTION

Riveted and Welded

Specialists in PAPER DIGESTERS and Heavy Plate Work

RITER-CONLEY COMPANY

Pittsburgh, Pa.

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FELTS

for

Longer Better and Most Economical

SERVICE

That is no sweeping platitude. It is true—absolutely true. Mills that have taken the slight trouble required to investigate can vouch for the accuracy of the statement—which mills, by the way, are today Orr users and Orr boosters.

The line is complete—contains the exact length, width and texture your particular machine must have.

An inquiry will bring an Orr felt specialist qualified to suggest the particular felt that will remove the most water—AND DO IT FASTEST.

The Orr Felt & Blanket Co.

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Complete Mill or Equipment Layouts.

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inventory any excess over a stated order for stock material, thus lowering the labor and power cost, which are disproportionately high on short runs.

Another means of cutting costs has been found in the introduction of automatic washing devices to clean the paper machines. This eliminates the former practice of washing by hand, which, of course, delayed operations.

In the course of their efforts of matching paper, Eastern has further decided upon the practice of making up handsheets of stock before the machine is ready to take the pulp thus securing a definite check on color, before the run is made.

Eastern is securing substantial results by the laboratory experimentation. In its linen finish practice, it obtains the same effect as of old by running the paper between the linen belts with a resultant product of greater uniformity. It has also developed a continuous dryer which gives the same desirable effects as loft pole dried paper, but eliminates the pole marks. The paper is now run through in the web and cutting is eliminated. Eastern believes that this has cut costs, improved quality and opened the markets for a loft-dried paper to a greater extent.

Kalbfleisch and American Cyanamid Merge

It is announced that a reorganization of the Kalbfleisch Corporation with American Cyanamid Company through the consolidation of the assets of The Kalbfleisch Corporation with the assets of American Cyanamid Company has been approved by the boards of directors of both corporations, subject to confirmation by the stockholders of the respective companies. The Kalbfleisch Corporation will continue to operate as a separate organization and no change in the management is contemplated.

American Cyanamid Company is a large manufacturer of mining and industrial chemicals and fertilizer materials, including cyanides, cyanamid, sulphuric and phosphoric acids, ammonia, prussiates, etc., with plants in the United States, Canada and Spain. The Kalbfleisch Corporation manufactures chemcials for papermaking, textiles and other purposes at its six plants in the United States, and has ore mines and plant in Dutch Guiana, South America.

The two companies use some of the same basic materials in their operations and this reorganization will create advantages through consolidation of plant facilities, research and technical developments.

The one hundredth anniversary of "Kalbfleisch" in the chemical industry was celebrated in March, 1929.

Ogden Minton in Finland

Finnish and German paper industry publications of recent date contain accounts of the visit of Ogden Minton, of Greenwich, Conn., to Finland. During his stay in Helsingfors, Mr. Minton addressed a meeting of paper and cellulose engineers and gave an account of the invention of the Minton vacuum dryer which was discussed by leading Finnish experts on drying methods. In an interview published in **Pappers-och Trävarutidskrift för Finland**, Mr. Minton said that he was greatly impressed by the very solid technical education and knowledge which seem to characterize the Finnish paper and cellulose engineers. He commented also on their insight concerning industrial conditions in other countries, particularly those existing in the United States. He expressed astonishment at the extravagant exports of pulpwood from Finland and said that Fininsh forest owners would sooner or later regret this policy of waste. He praised the rational and conservative principles of forest conservation observed in Finland.

Stebbins Engineering & Mfg. Co.
Chemical Pulp Mill Engineers
WATERTOWN, N. Y.
Digester, Acid Proof and other Guaranteed Linings.
Chemipulp Cooking and Recovery Process.

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Special Steel Plate Work for the Paper and Pulp Industries

We are capably equipped for special steel plate construction up to 2" thick for the paper and pulp industries, covering the following uses:

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HIGH PRESSURE TANKS
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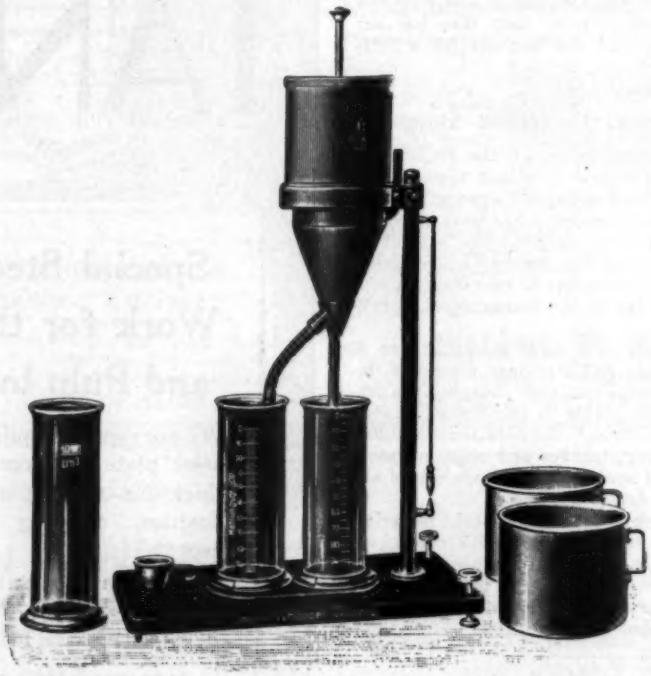
OF YOUR

BEATERS

INSURES UNIFORM QUALITY OF PAPER FROM ONE RUN TO ANOTHER



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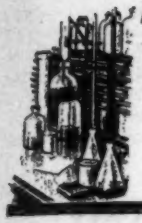
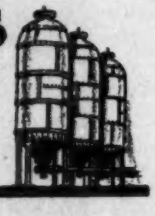


Technical Developments in the Paper Industry



Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Determination of Rosin in Rosin Milk

ROSIN is determined best in rosin milk by a volumetric method. Thus twenty-five cc. of the rosin milk are placed in a 250 cc. beaker and mixed with twenty-five cc. of tenth normal sulphuric acid. The liquids are thoroughly mixed together and then filtered through glass wool. The excess acid then titrated back with the aid of a tenth normal solution of sodium hydroxide. The difference between the cubic centimeters of sulphuric acid and of sodium hydroxide is then multiplied by the molecular weight of the rosin, namely 0.0302. The results are converted to the liter basis by multiplying by 40 and also by the coefficient of saponification, which is obtained from the analysis of rosin milk and represents the ratio of total rosin to the combined rosin.

A number of experiments were instituted for the purpose of determining which method is best suited for this purpose and the results are tabulated. The method of extracting the rosin by means of ether and then drying the ether extract gives satisfactory results, but it is costly and takes a long time. The titration method is the quickest and most economical. It takes only four to five minutes for an analysis. Cheap reagents can be used. Zellstoff und Papier, 1929, pages 228-9.

Digestion of Pinewood with Sulphites

A NUMBER of digestion experiments are described in which different sulphite solutions are used for digestion of pinewood. These experiments were carried out in a rotary digester of 5.5 liters capacity, and also in a bronze autoclave of eight liters capacity. The rotary digester was found to have the advantage that samples could be taken from it during its operation, while this was not possible in the stationary digester. Even though the results that are obtained with the digestion of pinewood in these small experimental digesters cannot be translated into practical digestion conditions in the paper mill, nevertheless they are of considerable importance in that they make possible the determination of the digestive action of different liquors. These were prepared in the following manner: The sodium sulphite liquor was made by dissolving sodium sulphite in water while the sodium bisulphite liquor and the sulphurous acid containing sodium bisulphite liquor were obtained by introducing sulphur dioxide gas into sodium hydroxide or by the mixing of equal parts of aqueous sodium sulphite solution with sulphurous acid solution. The calcium bisulphite liquor was obtained by the introduction of milk of lime into sulphurous acid.

A number of digestion experiments were carried out. Pinewood was digested in the rotary digester with sodium sulphite solution, the temperature being 145 to 150 degrees C. and the pressure 5 to 5.5 atmospheres. The remarkable feature of the digestion was the slowness of the action of sodium sulphite at 145 degrees C. It is concluded that this process, direct digestion with sodium sulphite, has no technical appeal when effected at low temperatures and pressures.

The wood was first impregnated with sodium bisulphite and then digested with sodium sulphite in a rotary digester. The impregnation took fourteen days at room temperature, and six hours at 100 to 105 degrees C. Digestion was effected at the same temperature and pressure as above. The yield was better than in the first case and is explained by the comparativeness shortness of the digestion.

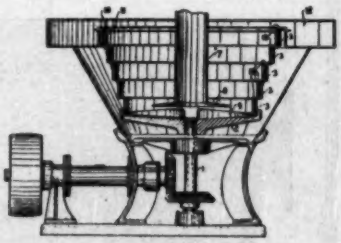
Another experiment was made with short impregnation with sodium bisulphite solution and rapid cooking with sodium sulphite solution in the bronze autoclave. It was found that at a temperature of 170 degrees C. the digestion was comparatively slow.

Rapid digestion with sodium sulphites solution at a high temperature in the bronze autoclave showed that while the yield was 66.3 per cent, the wood was very little disintegrated and very irregularly at that. It was clear that preliminary impregnation of the wood with sodium bisulphite entails an important advantage. Steam digestion with sodium bisulphite solutions were also carried out, as well as with calcium bisulphite liquor and magnesium bisulphite liquor for comparative purposes. In the first case the wood was only slightly softened. In the second case the results were somewhat better than in the first and in the third instance the wood was less decomposed than in the second.

A more marked physical change in the fibers was effected by the steaming process. The wood was softened to a certain degree without losing much of the incrustations. Dr. C. G. Schwalbe and Dr. W. Lange, Der Papierfabrikant, volume 42, 1928.

Centrifuge for Cleansing Paper Stock

THE hollow shaft (1) of the new type of centrifugal machine carries the bottom of the machine (2), in which the drum with five sections (3) is set. The paper stock, which is to be cleaned, is continuously fed into the drum through the inlet pipe (7) provided with a wide flange (8). It is immediately set into rapid rotation by the vanes (9) on the bottom (2). The stock is accordingly thrown against the wall of the drum with great centrifugal speed with the result that the impurties are eventually removed from the fibers. A cylindrical layer is accordingly formed in the first section, whose thickness corresponds to the width of the ring (10) at the upper edge of this section. In the same measure, with which the paper stock is fed through the pipe (7), the stock moves upward in the section of the drum, attaining greater centrifugal speed and effecting the removal of the impurities which still cling to the fibers. The mass rises in the machine until the purified fibers finally emerge and fall into the stationary container (12). H. Thomassen, Arnheim, Holland, German Patent No. 472,517.



Multi-Motor Drive on a Paper Machine Making Fine Paper

THE advantages of multi-motor drive on a paper machine which makes fine grades of paper are described in detail as well as the various essential parts of the drive itself. The method in which the drive is operated and its practical usability, as well as the economic aspect of the method are discussed. The regulating devices employed receive attention. A description of a specially designed differential regulating arrangement is also included. A speed regulating device

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which makes the speed of the travel of the paper web through the machine independent of external influences, such as the frequency and the variation in voltage in the line as well as changes in the load on the driving apparatus is also described. The attention that is required by this sort of an arrangement is described.

Interesting curve sheets accompanying this article, of which three are reproduced here. Figure 1 shows the relation be-

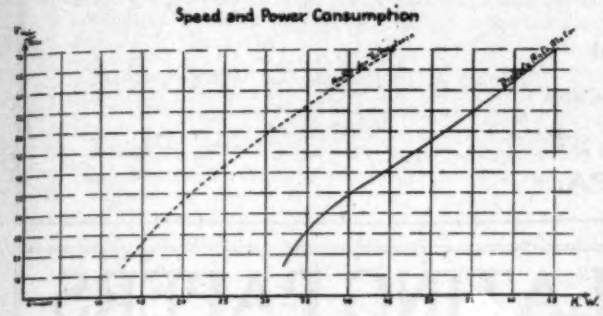

Figure 1

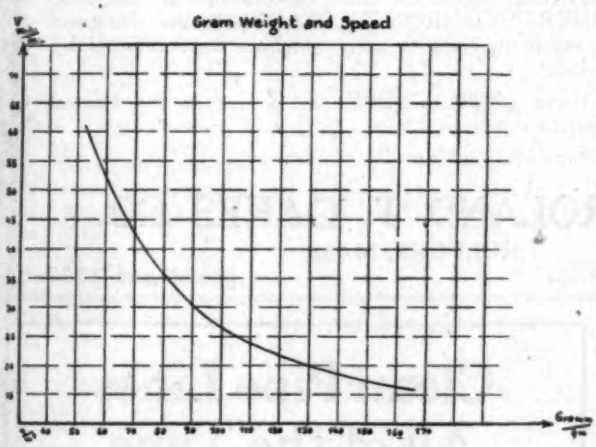

Figure 2

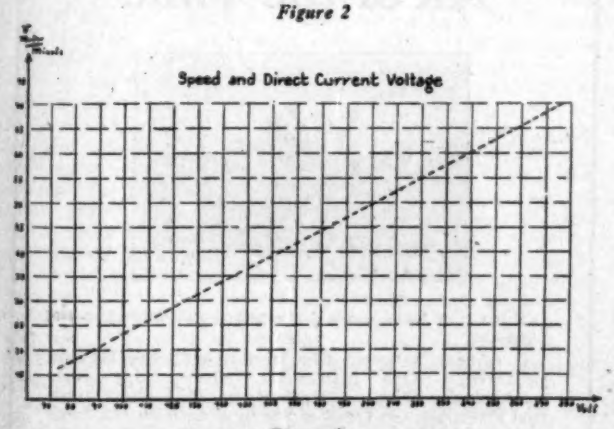

Figure 3

tween the speed and the direct current voltage. The speed-voltage curve must be linear, that is, a straight line. The turning moment of the individual groups remain almost constant at each speed. Figure 2 represents the relation between the gram weight and the speed. This curve represents an average or median line which is drawn through a locus of points. It should be remembered that the weight of the paper sheet per square meter is affected not only by the speed of the papermaking machine but also by the rate of flow of stock to the machine and the density of the stock. Figure 3 shows the relation between the speed and the consumption of power. When the approximate speed for a definite gram weight is determined from Figure 2, then it is possible to determine from Figure 3 the portion of current cost per kilogram of paper for calculation purposes. H. Kuhn, Der Papierfabrikant, volume 27, 17-22.

Removal of Condensate from Rapid Running Drying Cylinders by Means of Centrifugal Force

THE various methods of removing the condensate from rapid running drying cylinders are first discussed and their effectiveness analyzed. In the new method a type of machine is used in which the drying cylinder is internally provided with a large number of ribs which run transversely. These ribs form channels which are somewhat inclined to one side and which end in a lateral collecting channel, in which a suitable removing or scooping device is located. This device can be adjusted not only with respect to the direction of movement of the cylinder, but also with respect to the distance between the end of the device and the bottom of the collecting channel. As the quantity of water that enters the cylinder varies, different operating conditions can be secured by varying the speed of the machine and adjusting the position of the scooping device. These conditions are accordingly adjusted to the varying amounts of water that remain in the cylinder, the magnitude of the centrifugal force at different cydlinder diameters in kilograms per kilogram of water. The conditions can also be adjusted in such a fashion that the machine can operate at high centrifugal force, that is, at a speed of 200 meters or more and relatively small diameter of cylinder. Good results can be obtained under such circumstances.

When the depth of the transverse channels is increased, rapid removal of the condensate is accomplished at lower speeds of the machine. A number of experiments were carried out with steam to determine the transmission of heat at the surface of the cylinder. The surprising result was obtained approximately the same temperature exists on the cylinder surface, irrespective of whether the condensate is removed as thoroughly as possible, or whether the entire surface of the channels within the cylinder is covered with a more or less thick water film. Even when a layer of water five millimeters thick is spread over the entire surface, there is no decrease in the transmission of heat. The layer of water does not, therefore, present any impediment to the transmission of heat. The bad heat conducting properties of a stationary water film are known. However, in the rapidly rotating cylinder, the water film, affected by gravity, is kept in motion. This is also due to the movement of the cylinder wall itself. This relative speed is greater the thicker the water layer, which has the effect of increasing the value of the heat conducting coefficient of water considerably over unity. E. Oeman, Svensk Papp. Tidn., volume 31, pages 710ff..

Factors Affecting the Sizing of Paper Pulp

THE mechanism of the sizing process is discussed and the important factors controlling it are studied. Various theories of sizing are briefly described. Four important factors are outlined namely, the water, the pH coefficient, the quality of the rosin and its dispersion, and finally the quality of the pulp.

Best results are obtained with pure water. Hard water introduces difficulties which may be overcome by the addition of protective colloids, such as starches, glucose, dextrin, gelatin, casein, silicate of soda, etc. to the rosin milk. The work that has been done in determining the relation between the quality of the sizing and the pH coefficient is reviewed. Attention is called to an important patent taken out by F. Dobler (French Patent No. 577,349) in which the following procedure is practiced for removing the inconveniences attendant upon the use of an acid medium in sizing: The acid is neutralized, either partially or entirely, after the formation of the gel-like resinous precipitate, and such substances as carbonate of calcium are used, for this substance will form a neutral compound which does not attack the rosin complex. After the paper pulp has been sized in the beater and as soon as the insoluble rosin precipitate is formed, powdered chalk is added to the mass in the proportion of one kilogram per kilogram of sulphuric acid that it is required to neutralize. The pre-

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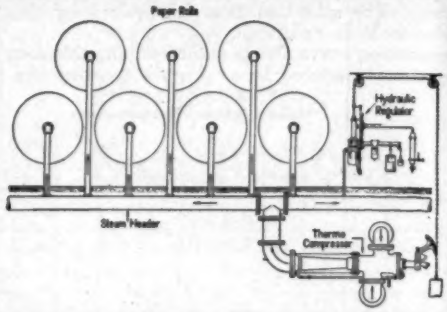

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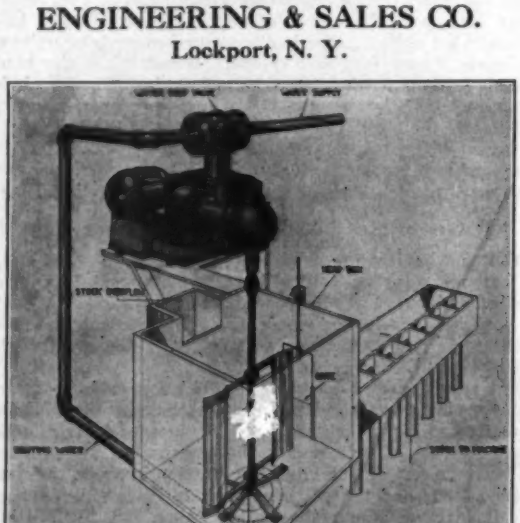

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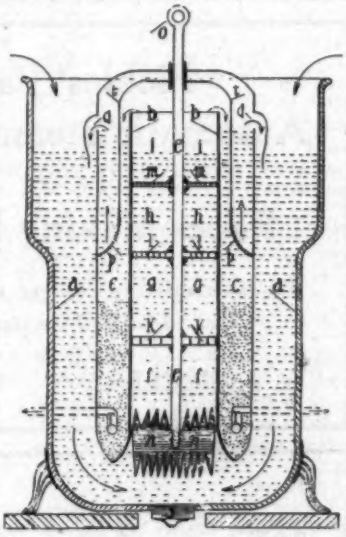
cipitated sulphate of lime, white and insoluble, remains in the paper as an inert filler and does not change the color of the pulp which can moreover be easily colored as heretofore.

Various properties of rosin as they affect the sizing quality of the paper produced are also discussed. Considerable space is also devoted to a discussion of the role that the impurities, contained in the paper pulp, play in the sizing operation. It is pointed out that it is essential to take these ino consideration in the sizing process. R. Escourrou, Le Papier, April, 1929, pages 403-7.

Disintegrating Apparatus for Old Paper

THE new type of apparatus is a combination device which softens the paper and purifies the stock as well as affording circulation for the mixture of water and stock and delivering a proper density mixture ready for papermaking



The apparatus is constucted in cylindrical form and comprises a container (a) in which the old paper is filled. There is an inner stamping cylinder (b) which is open at the top and bottom. The container (c) which surrounds the latter is closed at the bottom and serves to collect the finished stock. The cylinder (b) as well as the container (c) are fastened in suitable manner to the shell (a).

The push rod (e) is shown provided with a stamping device (n) at the end as well as with circular screens (k), (1) and (m) in the intermediate spaces (f), (g), (h) and (i). The stamping piston can be moved up and down within the cylinder (b). The end of the rod (e) which is made with a hook (o) is used for fastening the latter to a crank shaft. The apparatus operates in the following manner:

After the stock container (a) has been filled with old paper, enough water is added so that the three screens (k), (l) and (m) are under water at their lowest positions in the cylinder (b). As the rod (e) with the screens (k), (l) and (m) move down as well as the stamping device (n), the latter squeezes the paper which is located in the bottom of the container (a) and disintegrates it, with the result that a portion of the stock is pushed through the openings in the stamper (n) into the space (f) within the cylinder (b). As the stock passes through the screens (k) and (l) provided with wide openings, it is separated into fines and coarse and the particles which have not been proper disintegrated are held back until they are. The stock which finally passes through the fine-meshed screen (m) is in the proper condition to be removed from the apparatus.

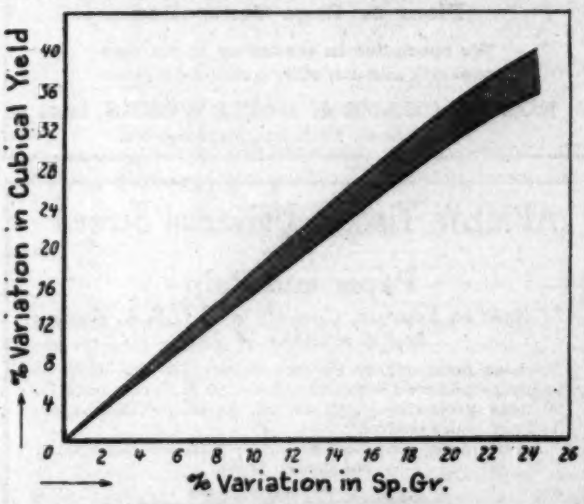
A layer of fibers will thus be formed in the space (i) on the screen (m), which prevents the backward movement of the water as the screens is moved upwards. The result is that the greatest portion of the mixture of water and stock is lifted over the screen (m) and runs over the edge of the cylinder (b) into the settling container (c). The fibers are allowed to settle within this space. The fibers are held back by the screen-shaped end (p) of the bell-shaped cylinder (t) which is suspended in the top of the settling chamber (c). On the other hand, water is permitted to flow through the screen and out over the edge (q) into the container (a). The concentrated stock in the bottom of the settling chamber (c) can be removed by means of the outlet pipe (r). Thus the mixture of water and stock is circulated in such a manner that the stock is separated from the water without great loss of the former. The impurities and other substances which collect in the container (a) and finally settle to the bottom are removed through the opening (s). F. Pfeffer. German Patent No. 471,965.

Effect of Specific Gravity on the Volume Yield of Digesters

MANY investigations have been made and different machines and methods have been developed for increasing the amount of wood loaded into the digester so that the best possible use can be made of its cubic contents with resulting reduction in the cost of the digestion process. The important question is the effect of the specific gravity of the wood on the volume yield. Results have indicated that the yields from the same kind and make of digester, operated under the same conditions, vary more considerably than what could be accounted for by legitimate operating allowances.

An investigation has shown that the specific gravity of the wood is an important factor in this respect. This is particularly true with pinewood which is not a homogeneous material. Ordinary pinewood has a specific gravity of 1.56, but that of the dried wood varies in accordance with the ratio between the number of cell walls and the porous spaces in each stem. The climatic conditions under which the wood is grown also has a great effect on the specific gravity.

It is generally assumed that one kilogram of pinewood always gives the same percentage yield of pulp when subjected to the same degree of digestion. It has, however, been found that the cellulose content of wood in the absolutely dry state with a specific gravity of 0.382 is 53.4 per cent, while



the content is 57.3 per cent at 0.425 and 58.3 per cent at 0.446 specific gravity. A greater yield is thus obtained from the heavier wood.

The yield obtained from the digester is, however, much more strongly affected by the fact that when the specific gravity of the wood is greater, more actual wood is fed into the digester. Thus, ten per cent greater weight of wood is filled into the digester and ten per cent greater yield is expected from wood of 0.44 specific gravity than from wood of 0.40 specific gravity. G. Soltau, Zellstiff und Papier, year 1929, pages 283-4.

Removing Water from Paper on the Couch Roll in Papermaking Machines

THE new apparatus is shown in diagrammatic form in the accompanying illustration in combination with a longitudinal or fourdrinier wire. The wire is shown at (a), which is supported on the usual wire carriers (b) and passes over the usual suction boxes (c). It also passes around the couch roll (d), which is made in the form of a suction roll. Inasmuch as a longer suction area is required in the new process, the diameter of the couch roll (d) is very large, for the reason that only one-quarter of the circumference of the roll, as

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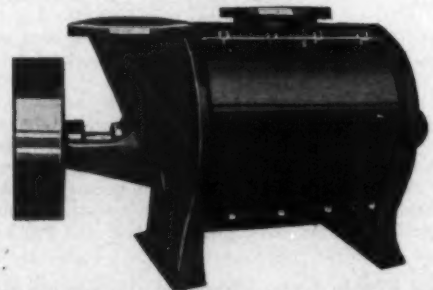

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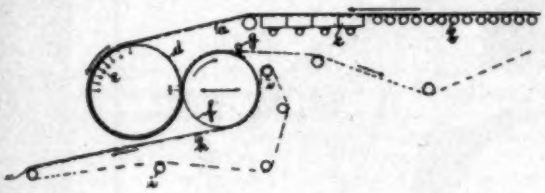
shown in the diagram by means of a series of arrows, (e) is available for suction purposes.

The other couch roll (f), which is covered with a felt as usual, is arranged alongside the couch roll (d) under the wire (a) and is supported in bearings which can be moved along horizontal sliding guides. Hence, it never can exert a pressure due to its own weight on the paper or cardboard web. Couch roll pressure is obtained in this instance



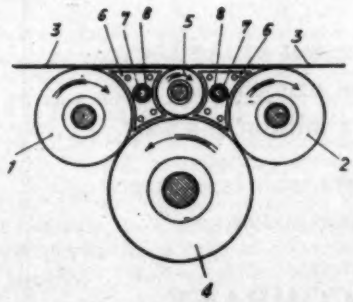
only by means of a lever and weight and can be varied from a maximum to nothing. In the ordinary couch roll press, when the weight is removed from the upper couch roll, the latter is carried along by the lower couch roll only in an unsatisfactory manner. It, therefore, slips easily and hence disrupts the even structure of the paper web. In the new arrangement, the couch roll, which lies over the wire, is surrounded over a quarter of its circumference by the wire, which lies on it, so that it is carried along in every instance and no injury can, therefore, be done to the paper.

The paper web, which has been sucked dry by the couch rollers (d) and (f) and also well pressed, is blown away from the wire (a) and on to the roll (f) by a blast of air from the pipe (g). The carrying felt (h) then removes the web from the roll (f) and carries it further through the papermaking machine.

When the paper is thick, it was found that dehydration could not be properly effected by air pressure. Wire marks have also been found on papers which are handled in the aforedescribed manner. These difficulties have, however, been overcome. An endless wire, which runs along with the main wire, passes around the couch roll under the wire and the other couch roll above the wire in such a fashion that the latter roll lies in this second wire, which is held constantly under tension. With the aid of this second wire, a better dehydration of the paper web or cardboard web is attained, the adherence of very thick webs is prevented. F. Dettelbach, German Patents Nos. 474,106 and 474,107.

Suction Box for Paper Machines

IN order to simplify the construction of the box and also to remove the disadvantages in the operation of the box as made in the usual manner, the new type of box is pro-

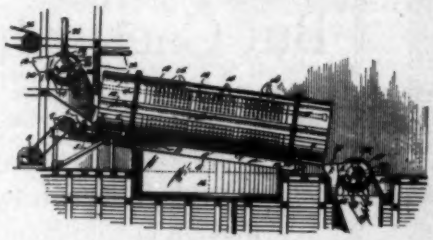


vided with an additional cylinder or roll which is located between the two upper cylinders, as may be seen in the accompanying illustration, and is likewise rotated by coming into contact with the lower roll. The additional roll makes hermetically sealed contact with the latter and there is accordingly formed between the additional roll and the two upper rolls, as well as the one lower roll, two suction chambers which are hermetically sealed and separated from each other. This arrangement allows two suction chambers to be obtained with four rolls and different degree of pressure may therefore exist in these two chambers. Furthermore the sagging of the wire may be used to produce compression on the intermediate roll against the lower roll, in such a manner that the degree of tightness between the two suction chambers can be automatically made to depend upon the suction existing in the two chambers.

The upper rolls are shown at (1) and (2) on which the wire (3) rests. The rolls (1) and (2) turn on the lower roll (4) covered with rubber and driven by means which are not shown in the illustration. This roll (4) carries along the rolls (1) and (2) at the speed of the wire, so that there is no relative movement between the wire and the rolls. Furthermore, this prevents the wire from being retarded in its movement over the rolls (1) and (2). Inasmuch as the distance between the upper rolls (1) and (2) is large, in order to prevent too great sagging of the wire between these two rolls, an intermediary roll (5) is inserted which is also driven by the roll (4) at a speed equivalent to that of the wire (3). This roll (5) forms hermetically sealed chambers as can be seen from the illustration. The ends of these chambers are closed by the end pieces (6). The sagging of the wire (3) produces a pressure on the intermediary roll (5) against the lower cylinder (4), and the force of the pressure of the cylinder (5) against the cylinder (4), and consequently the degree of tightness between the two suction chambers is automatically dependent on the suction that exists within these chambers. M. Hroch, French Patent No. 649,949.

Preparing Pulp in Papermaking

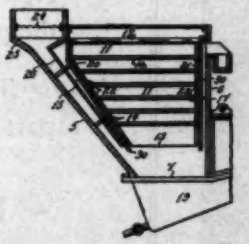
THE apparatus which is used for the preparation of paper stock by reducing it to pulp consists of a primary shredder (19). This apparatus has spaced shredder bars in its bottom



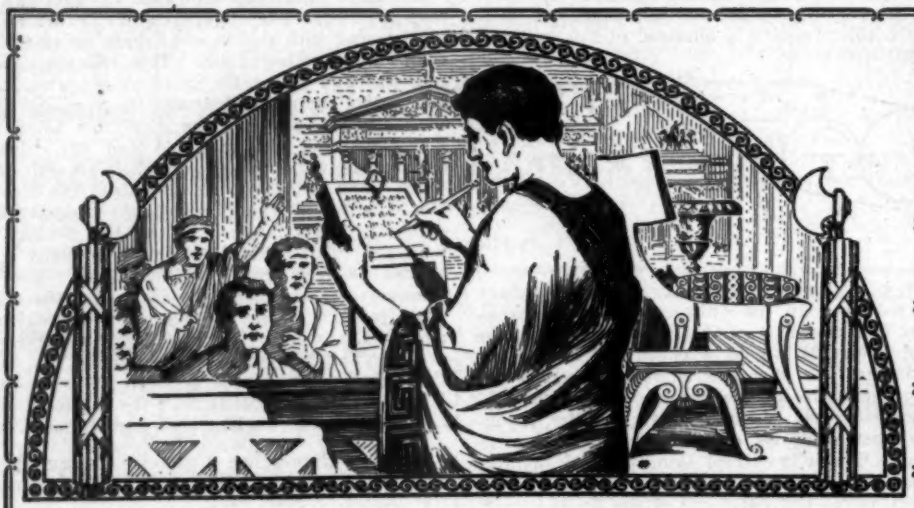
and revolving pivoted hammers to coact with the shredder bars. The shredded materials is discharged directly into the rotatable perforated screen drum (12) which is open at the ends. The material passes through this drum and into a second shredder (24) which works up the shredded material still further. F. Kerr, Averyville, Ill., and M. Zimmerman, Lockport, N. Y., United States Patent No. 1,709,133.

Separating the Constituents of Pulp

THE apparatus consists of upper and lower inclined boundary members (5) providing between them an inclined settling chamber. Pulp is fed in at one end at (24) of the chamber and is withdrawn at the other inclined end (19). The pulp is caused to flow in a horizontal path across the chamber. Baffles (10) are arranged within the chamber at the inclined ends so as to control the flow of pulp into and from the chamber. Means are provided for collecting the material which gravitates out of the settling chamber. T. G. Martyn, Johannesburg, South Africa. United States Patent No. 1,709,676.



Alvin T. Simonds, president, Simonds Saw and Steel Co., Fitchburg, Mass., has announced his economic essay contest for the year 1929 on the subject "The Federal Reserve System and the Control of Credit". As previously, $1000 will be awarded for the best essay and $500 for the next best.



But Caesar had no Printing Press

Julius Caesar built up a vast dominion by the force of his own personality. When Caesar was gone the empire crumbled. The different parts had no common ground of thought to hold them together.

Lack of communication was a serious handicap in ancient times. Word-of-mouth messages get to their destination slowly and inaccurately. A growing world consciousness depends upon an easy and accurate diffusion of information.

Printed sheets of paper brought men out of the Dark Ages into our modern civilization. The printed page has the power to move minds, a hundred or a million at a time.

To make the printed page broadly available is in large part a responsibility of the modern paper maker.

HAMMERMILL PAPER COMPANY

Erie, Pennsylvania

New York, July 1, 1929.

WHILE there is something of a lull in the paper market—usually encountered at this period of the year when paper manufacturers, distributors and consumers are engrossed in compiling mid-year inventories, and otherwise putting their affairs in shape for the summer season—business in paper continues to develop fairly well, and the market is exhibiting moderate activity. Buyers are operating cautiously and almost entirely against direct and actual requirements, but aggregate demand is of a scope that is keeping paper and board mills comparatively busy, while on the distributing end of the market there is fair activity also although most of the orders now coming in are for limited-sized quantities of paper.

Mills which have the bulk of their output sold on contracts are well engaged, and give promise of continuing busy, or fairly so, throughout the warm weather months. On the other hand, there are instances reported where mills have curtailed production, having cut down their manufacturing to a certain percentage owing to a narrower call on them for supplies from consuming and merchandising quarters. Nevertheless the belief obtains in the industry that demand for paper of most kinds will keep up in comparatively good volume during the customary quiet summer season, since it is felt that most consumers and dealers are carrying less than normal stocks so that it will be necessary for them to go to mills right along to replenish their supplies as their needs arise.

Prices of the various classes of paper are developing little change of consequence. There are slight fluctuations, of course, but in a general sense, market quotations are well maintained and sellers are not exerting undue pressure on buyers. Manufacturers seem bent on receiving the prices asked, and are not in much of a mood to grant concessions while stressing that they are already working on such a close margin of profit that to reduce prices any further would eliminate entirely any remuneration to them in their manufacturing operations.

Production of paper in the United States in April showed an increase over the preceding month, totaling 586,601 net tons of all grades, as compared with 578,035 tons in March last and 529,755 tons in February, according to identical mill reports to the American Paper and Pulp Association. The April output also compared with 537,760 tons manufactured in the similar month last year, representing a gain of about 9 per cent. All grades excepting wrapping and hanging registered increases in monthly production over a year ago. Bag paper output was 37 per cent greater, felts and building 16 per cent, paperboard 13 per cent, and uncoated book and tissue papers 12 per cent, while hanging paper production was 21 per cent less and wrapping one per cent less. Shipments of all kinds of paper during April this year totaled 581,539 tons, which were in close proximity to the month's output, and comparing with 608,922 tons shipped from mills in the preceding month. Stocks on hand at mills aggregated 248,842 tons at the end of April, against 252,835 tons a month earlier.

The production of newsprint hit the high spots in May, reaching what is probably a new monthly record on the North American Continent. Mills in the United States manufactured a total of 123,504 net tons of newsprint in May and shipped out 124,840 tons, contrasted with 118,679 tons made and 121,548 tons shipped in the preceding month, while Canadian mills produced 245,644 tons and shipped 247,449 tons, against 221,784 tons made and 220,270 tons shipped in April, according to the monthly statistical summary of the News Print Service Bureau. The total output for the two countries in May was 369,148 tons, and shipments were 372,289 tons compared with 340,463 tons manufactured and 341,818 tons shipped in April. During May, 21,569 tons of newsprint were made in Newfoundland and 1,720 tons in Mexico, so that the total North American production for the month amounted to 392,437 tons. The Canadian mills produced 118,712 tons more newsprint in the first five months of this year than in the same time of 1928, which was an increase of 12 per cent. The United States output was 14,904 tons, or 2 per cent, less than in the first five months of last year, while production in Newfoundland was 9,296 tons, or 10 per cent, more than in 1928, and in Mexico 1,821 tons more, making a total increase of 114,925 tons, or 7 per cent, over the same period of last year. The Canadian mills operated at 87.6 per cent of their rated capacity in May, and the United States mills at 101.4 per cent. Stocks of newsprint at mills at the end of May were 23,893 tons in Canada and 25,778 tons in the United States, making a combined total of 49,671 tons, which was equivalent to 3.1 days' average production.

Mills in the United States produced a total of 250,957 net tons of paperboard during April, as contrasted with 256,118 tons in the preceding month and 221,089 tons in the corresponding month last year, according to the monthly statistical summary compiled by the U. S. Department of Commerce. Board mills produced at 87.1 per cent of their rated capacity in April, against 88.9 per cent in March. Board production during the first four months of the current year reached a total of 983,399 tons, compared with 864,167 tons in the similar period of last year. New orders for board received by mills in April last called for a total of 250,577 tons, against 266,895 tons in the preceding month, while unfilled orders held by manufacturers at the end of April were for 98,162 tons, contrasted with 96,209 tons at the end of March. Shipments of board from mills during April aggregated 247,984 tons, compared with 258,604 tons in the preceding month and, stocks of board at mills totaled 57,678 tons at the end of April, against 54,982 tons a month before.

Demand for fine paper is holding up moderately well and there is a steady movement of supplies into consuming channels at maintained prices although buyers are ordering mostly in small lots. A majority of fine paper mills are reported operating at a basis of about 80 to 85 per cent of their capacity. Newsprint is being consumed in larger tonnage—perhaps a bit larger than normally at this time of the year—but there has been, of course, some decrease recently, because of the season. Pegged quotations on newsprint are sustained fully, and there is little or no talk in the trade concerning the probability of a revision over the balance of this year, or for next year. Wrapping paper demand is fair, mills are comparatively busy for this season, and prices are quoted steadily. Book paper is wanted in at least customary tonnage, and mill quotations are maintained. There is about as broad a demand for tisue, hanging, cover and other kinds of paper as could reasonably be expected at this time of the year, and manufacturers are adhering to the prices quoted with few exceptions. Papers consumed in larger volume during the summer, such as cup, towel, napkin and other lines, have had a good run of demand lately, and display a firm price undertone. The market for box board is moderately lively though this is the in-between seasonal period in boards when consumers are buying in a restricted manner. Quotations on boards are steady, with mills in the East naming $35 a ton for plain chip board delivered in New York City and $37.50 delivered for filled news board. *Strawboard is quoted at $50 per ton delivered in this city.

Owing to a steady increase of business, the Morey Paper Mills Supply Company has found it necessary to move to larger quarters, and is now located at 38 Chauncy Street, Boston, Mass.

Diamond Liquid Chlorine

Diamond Liquid Chlorine, in thoroughly clean, multiple or single unit tank cars, will retain its high purity indefinitely.

Shipments are made direct from the Painesville, Ohio plants, strategically located on three trunk lines—thus assuring quick availibility of Diamond Liquid Chlorine in any quantity.

ALKALI

Diamond Alkali Co.

PITTSBURGH, PA.

Papermaking Rags

While there is somewhat of a seasonable lull in demand for rags from paper mills, at the same time the movement of supplies is keeping up in fairly good volume, and a steady undertone characterizes prices. Buyers in numerous cases have let down in their market operations as they usually do at the inventory period, and there appears little doubt that most of the present trade activity is centered on a few certain classes of rags, but dealers in general report that the aggregate business transpiring measures up well to that ordinarily recorded at about this time.

Dealers' contentions that the steadiness of prices is in part due to the supply situation seem well founded. There is no shortage of rags, which is to say that consumers are experiencing no real difficulty in covering their needs—if not with some grades, in others that serve the purpose—but it appears to be a fact that the available supply of some kinds of papermaking rags is falling a bit short of normal, and that this unquestionably is helping to sustain market values. Imports recently have decreased, because of several reasons it is stated. First, there is a better market for rags in Europe where paper mills are reported working a greater capacity than they were, so that fewer rags are obtainable by American importers; second, the prices prevailing in frequent instances abroad are above a parity with the market here, which curtails buying by importers, and third, there seems every reason to believe that the large stocks of rags which were held in some of the European countries have been liquidated, with the result that dealers are obliged to confine their offerings to current collections, and nearly all reports from the other side of the Atlantic say that not as many rags are coming into the market as normally.

Thus, with imported supplies on a smaller scale, paper mills in the United States are devoting most of their energy to filling their wants with domestic rags, which in turn is making for a relatively better call for domestic stock and helping to maintain market prices. Production of rags in this country also gives every sign of being less than normal. Collections of old rags are less; firstly, because there are not as many rags to be had owing to greater household use of rags for automobiles, dusters, etc., and secondly, because clothing manufacturing establishments have been working on curtailed schedules and therefore are not cutting up as much cloth as usually and consequently are not producing as many rag cuttings. All of which contributes to a fairly firm statistical position for papermaking rags, and explains why prices are holding their own in the face of a seasonal quieting of consuming demand.

Some grades of new cotton cuttings are moving freely, notably new light silesias, which are quoted by dealers at 8 cents or higher per pound f.o.b. shipping points; new blue overall cuttings, at 7.75 to 8 cents; O. D. khaki cuttings, at 6 cents; fancy shirt cuttings, at 6.50 cents; washables, at 5.50 to 5.75 cents, and new unbleached muslins, at 10.75 cents. New No. 1 white shirt cuttings are held for 10.50 to 11 cents a pound at dealers' points, and in some cases well above this price level is demanded.

Roofing rags of domestic origin continue in good demand, and No. 1 packing or cloth strippings is reported fetching 1.90 cents a pound f.o.b. shipping points, and No. 2 domestic roofing rags 1.45 to 1.50 cents. Foreign dark colored cottons are rather neglected by roofing felt mills, with nominal prices of 1.60 to 1.65 cents a pound ex dock New York obtaining. Old white cottons are in steady though limited movement at maintained prices, as are thirds and blues.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	10.50–11.00
White shirt cuttings, No. 2	7.00– 7.50
Fancing shirt cuttings	6.50– 6.75
Washables, No. 1	5.50– 5.75
Unbleached muslins	10.75–11.00
White lawns	9.50–10.00
Overall cuttings, blue	7.75– 8.00
Black silesias	4.75– 5.00
Light flannelettes	8.25– 8.50
Canton flannels, bleached	9.50– 9.75
Canton flannels, unbleached	8.50– 8.75
Shoe cuttings, bleached	7.75– 8.00
Shoe cuttings, unbleached	7.00– 7.25
Light silesias	8.00– 8.25
O. D. khaki cuttings	6.00– 6.25
Mixed khaki cuttings	5.25– 5.50
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.00– 3.25
Linens, No. 1, white foreign	14.00–15.00
Light prints, foreign	4.00– 4.50
Old Stock—	
Whites, No. 1, repacked	5.50– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.85– 2.00
Lace curtains	5.00– 5.25
Thirds and blues, rough	1.90– 2.10
Thirds and blues, repacked	2.50– 2.75
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.25– 4.50
White cotton batting	4.00– 4.25
Roofing, No. 1 (cloth strippings)	1.90– 2.00
Roofing, No. 2	1.45– 1.50
Linsey garments, foreign	1.80– 1.85
Dark colored cottons, foreign	1.60– 1.65
Blue linens, foreign	4.00– 4.25
Gray linens, foreign	4.25– 4.75
White linens, foreign	8.00– 8.50
Light prints, extra, foreign	2.50– 2.75

Rope and Bagging

Although paper manufacturers who consume old rope are professing to be less eager for supplies of this raw material, and although the market exhibits a quieter complexion, nevertheless it is apparent that offered lots of old rope are meeting with a ready sale to mills and that demand is easily ample to make for firmness in market rates. Dealers and importers stress the difficulty they are having in locating usual supplies, more especially of strictly No. 1 quality old rope, and assert that they have to grant stiff figures to obtain such rope as is available. Domestic No. 1 old manila rope is bringing 5 cents a pound f.o.b. shipping points in sales to paper mills, and in all probability above this price has been paid in some instances, while foreign old manila is selling at about the same price level, with 5 cents a pound ex dock New York being granted for desirable lots of the imported article. Strings are in routine demand, and devoid of interesting market feature, with mixed strings bringing 90 cents per hundred pounds or higher f.o.b. New York.

There is little activity of importance in the old bagging market. Paper mills are buying to satisfy actual requirements, but the volume of current business is small and prices show no change. No. 1 scrap bagging, free of tender and bright in color, is selling at 1.60 cents per pound at dealers' points, and roofing bagging at 1.25 to 1.30 cents.

FITCHBURG DUCK MILLS

ESTABLISHED 1844

414 Duck Mill Road, FITCHBURG, MASS.

Manufacturers of

TRIUNE and MULTIPLE PLY

CANVAS DRYER FELTS

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Fine Faced "English Woven" Felts for Fine Papers in Two, Three, Four, Five and Six Ply 60 Inches to 288 Inches in Width.

ABSOLUTELY NO FELT MARKS IN PAPER

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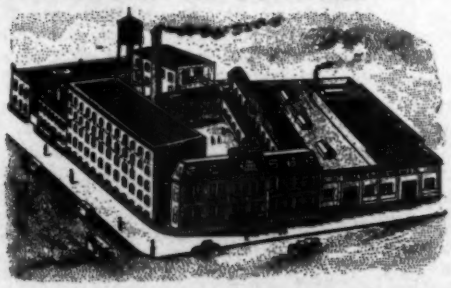
MANUFACTURERS OF

SUPERIOR FOURDRINIER WIRES

Blocking Wires
Cylinder Faces & Washer Wires
Red Brass Brush Wire



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143-151-163 Union Ave.
160-162 Union Ave.

BROOKLYN, NEW YORK

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.60–1.70
Gunny, No. 1 foreign	1.50–1.60
Scrap bagging, No. 1	1.60–1.70
Roofing bagging	1.25–1.30
Wool tares, heavy	1.65–1.75
Wool tares, light	1.55–1.65
Manila rope, No. 1 foreign	4.75–5.00
Manila rope, No. 1 domestic	5.00–5.25
Sisal strings	1.75–2.00
Mixed strings	.90–1.10

Old Paper

Demand for old paper has slowed down considerably, and the market is quieter than has been witnessed in some while. Paper and board manufacturers are buying to cover direct needs, but indications are that they have stocked up for a time and thus are enabled to refrain from further buying except on a limited scale, and also that they are not in want of as large tonnage as at some other period of the year. Prices in the East have slid off rather sharply to where sales of old folded newspapers are reported at 50 cents per hundred pounds f. o. b. New York, of No. 1 mixed paper at 45 cents, of No. 1 heavy book stock at 1.30 cents a pound, and of ledger stock at 1.20 cents per pound. Soft white shavings are in relatively good call and are fetching steady prices, good average packing bringing 2.50 cents and more a pound at shipping points, and extra packing of one-cut quality as high as 2.90 cents. On the other hand, hard white shavings and envelope cuttings are in slow demand and are mostly nominal in price. Old kraft paper is selling freely, with sales of No. 1 packing reported at 1.80 and 1.85 cents a pound, and of extra quality at 2 cents.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.60–3.00
Hard white shavings, No. 2	2.40–2.60
Soft white shavings	2.40–2.90
Colored shavings	1.00–1.25
Heavy book, No. 1	1.30–1.40
Crumpled book, No. 1	1.05–1.15
Ledger stock	1.20–1.30
Kraft, No. 1	1.80–2.00
New kraft cuttings	2.40–2.60
Manilas, No. 1	.70– .90
Folded news	.50– .65
Sulphite mill wrappings	.75– .85
Old corrugated boxes	.65– .70
New corrupated box cuttings	.75– .85
Mixed paper, No. 1	.45– .55
Common paper	.35– .45

Pulpwood

The in-between season finds little activity other than of routine character in the pulpwood market, and there is scant change of consequence noted in quoted rates. Contract shipments are of course moving forward in a regular way but transient demand is at a low ebb, with consumers manifesting limited disposition to buy at present.

During the first five months of this year Canada exported a total of 470,848 cords of pulpwood, valued at $4,315,939, all of which came to the United States, showing a sharp decrease from the 608,467 cords of a value of $5,481,588 exported in the similar period of last year.

Mechanical Pulp

The market for ground wood is rather a dull and featureless affair just at present. This, however, is the customary situation in mechanical wood pulp at this time of the year when consumers are well supplied as a result of heavy spring production of such pulp, and is causing little or no apprehension among sellers. Most custom grinders of pulp are waiting out the market in the expectation that as the fall draws nearer, open market demand for ground wood will increase and that the prices they now want and ask and find difficulty

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Commercial Sulphate of Alumina

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Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

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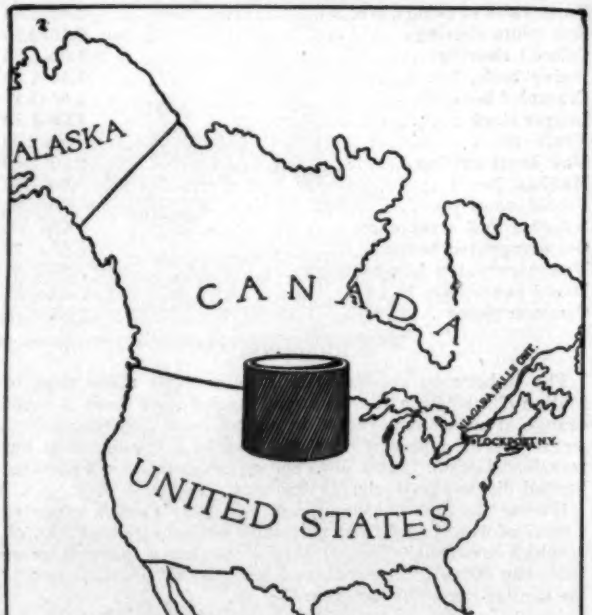

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in getting will then be obtained. No one appears to be pressing for sales, yet it is apparent that producers in certain instances are granting slight price concessions, particularly when sizable tonnage is concerned.

Grinders in Canada quote $25 a ton in a majority of cases for prime ground wood for prompt shipment f. o. b. pulp mills, with some purchases reported at a little under this price level. Domestic ground wood is around a quotable basis of $27 per ton at shipping points, while imported ground wood of Scandinavian origin is quoted at $32 to $33 per short ton ex dock American Atlantic ports for dry pulp.

During April, mills in the United States produced a total of 105,327 net tons of mechanical pulp, compared with 95,765 tons in the preceding month, according to identical mill reports to the American Paper and Pulp Association. Stocks on hand at producing plants at the end of April amounted to 104,516 tons, showing a gain from the 91,803 tons at the end of March.

Chemical Pulp

Supplies of chemical pulp are reported moving freely enough against contracts and back orders, but not a great deal of current activity in developing in the market. Most consumers evidently are amply fixed with stocks and incoming supplies, and are engaging in light purchases at best, now and then entering the market to satisfy some unexpected requirement or to buy a little pulp for filling in stocks. Prices are well maintained, and producing mills are said to be managing to dispose of practically all of their present output. Bleached sulphite of the more popular grades is quoted at around 4 cents per pound f. o. b. pulp mills, with the higher qualities ranging in price up to 4.75 cents. Strong unbleached sulphite is selling at 2.50 to 2.75 cents a pound for newsprint grades, and between 2.75 and 3 cents for book qualities. Bleached soda pulp is around a quotable level of 3.50 cents per pound delivered paper mills, and No. 1 domestic kraft pulp is quoted at 2.75 to 3 cents.

Production of chemical pulp in the United States in April reached a total of 132,422 net tons, against 130,755 tons manufactured in the preceding month, according to the American Paper and Pulp Association, while mill stocks at the end of April were 20,586 tons of all grades, contrasted with 21,241 tons a month earlier.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	3.75–4.75
Easy bleaching sulphite	2.75–3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50–2.75
Unbleached sulphite, No. 1 book	2.75–3.00
Soda pulp, bleached (delivered)	3.35–3.60
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.75–3.00
Screenings, refined	1.50–1.75

Chemicals

A steady movement of papermaking chemicals is reported against contracts, but the current market is developing rather limited activity. Quotations are stationary in most instances. Bleaching powder is unchanged in price at 2 to 2.35 cents per pound in large drums f. o. b. works. Casein is in spotty demand and is quoted on a range of from about 15.25 to 16.25 cents a pound, with duty paid on the imported product. Soda ash prices are steady at 1.32½ cents a pound for shipments in bags at works, and caustic soda is still quoted at 2.90 to 3 cents per pound for spot delivery f. o. b. works.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powder	3.50 – 3.75
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	15.25 –16.25
Caustic soda, spot delivery	2.90 – 3.00
China clay, domestic washed	8.00 –12.00
China clay, foreign	15.00 –20.00
Rosin, Grade E	8.25 – 8.40
Satin white	2.00 – 2.25
Soda ash, 50 per cent light (bags)	1.32½– ....
Starch, papermakers', in bags	3.82 – ....
Talc (ton)	16.00 –18.00

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"Whenever a man gets a notion into his head that he is indispensable, then is the time for him to grab his rubbers because he is due for a long, long slide."

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Installations Fully Guaranteed

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Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
White sulphite	10–30
Colored sulphite	10–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	8–30
Colored sulphite	8–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–13.00
Lithograph, M. F.	7.50–14.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Covered stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.75– .80
Kraft	.95–1.10
Wrapping—	
No. 1 kraft	5.50– 6.00
No. 2 kraft	4.50– 5.00
Southern kraft	4.75– 5.00
Boards—	**New York and Chicago**
Solid news	40.00–45.00
Straw	50.00–55.00
Plain chip	35.00–37.50
White coated chip	50.00–55.00
Manila coated chip	45.00–50.00
Binder's board	65.00–70.00

Merrick Elected Westinghouse President

F. A. Merrick, well-known within the electrical industry, was elected president of the Westinghouse Electric and Manufacturing Co., at a meeting of the Board of Directors in New York City June 26. Mr. Merrick succeeds E. M. Herr, president since 1911. Mr. Herr resigned in order that he might go on an extended vacation. He was made vice chairman of the Board.

Mr. Merrick entered the Westinghouse organization at the time of the acquisition of the Steel Motors Company. He advances to the presidency from the position of vice president and general manager. He has been a director of the company since 1925.

The Paperboard Industries Association will hold its July meeting at the Westchester Biltmore Country Club, Rye, N. Y., July 17 and 18.

Paper Investigations by Bureau of Standards

Discoloration of Paper by Ammonia Fumes—An unusual case of paper discoloration was brought to the attention of the bureau by the manufacturer of the paper. The paper was a high grade bond which had faded considerably when stored a short time in the office of an ice cream plant. Naturally, ammonia fumes were suspected as the cause and a laboratory test with ammonia fumes gave the same discoloration. This is a paper hazard not commonly considered. It seems quite likely in this case that the fading was due to the character of the dye used to "blue" the paper as some dyes are quite sensitive to alkaline substances.

Standardization of Lithographing Papers—The Lithographic Technical Foundation, Inc., has requested the bureau to make a co-operative research with them to standardize lithographic papers. The organization is composed of 411 concerns representative both of printers and manufacturers of the materials used in lithographing. According to information received from this organization, the economies made possible by the development of the offset printing process can be effected only partially at present because of lack of knowledge of the properties that the lithographic papers must possess. Apparently extensive research is needed to establish standards of quality for lithographic papers in order to better suit them to the offset process. While the bureau does not have sufficient funds to undertake research of this kind at the present time, in view of the large savings that might be effected, it is endeavoring to secure an appropriation for the purpose.

Preservation of Newspapers—The New York Public Library recently submitted samples of two newspapers covered with Japanese tissue, the same newspapers without the protective material, and a sample of the Japanese tissue. They had found that, although the Japanese tissue did not have all of the qualities desired, it was the best available material which could be used on an extensive scale for making the papers more resistant to the severe usage conditions of the library. The strength of the newspaper was determined before and after covering with the Japanese tissue. The various samples were then subjected to the artificial aging treatment employed by the Bureau of Standards whereby the paper is heated for 72 hours at 100 deg. cent. Differences in strength and color between the original samples and those artificially aged were noted. The results showed that the Japanese tissue afforded considerable protection to the newspapers. The strengths of the newspapers were increased three to four times by the application of this material. This is very important as newspapers are subjected to severe treatment while in the reading rooms, and, owing to their low strength, they are soon unfit for use. The data obtained proved also that the Japanese tissue protected the paper from the action of the artificial aging treatment. The protected newspapers retained between 80 and 90 percent of their strength after the heat treatment and did not discolor to the extent that the unprotected samples did. This protection against the heat treatment indicates that the Japanese tissue will give valuable protection to the newspapers from the action of the air and sunlight in the reading rooms.

The Papier Zeitung of Berlin is to issue a Spanish edition in August for circulation in Central and South America. The Gaceta Papelera, as the Spanish edition will be called, is to have a circulation of 4,000 in all Spanish-speaking countries besides Central and South America, which indicates a notable bid for export trade.

QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

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Incorporated
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21 East 40th Street New York City

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The Pulp and Paper Trading Co.
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Dealers in Domestic Chemical and Mechanical Pulps and Paper

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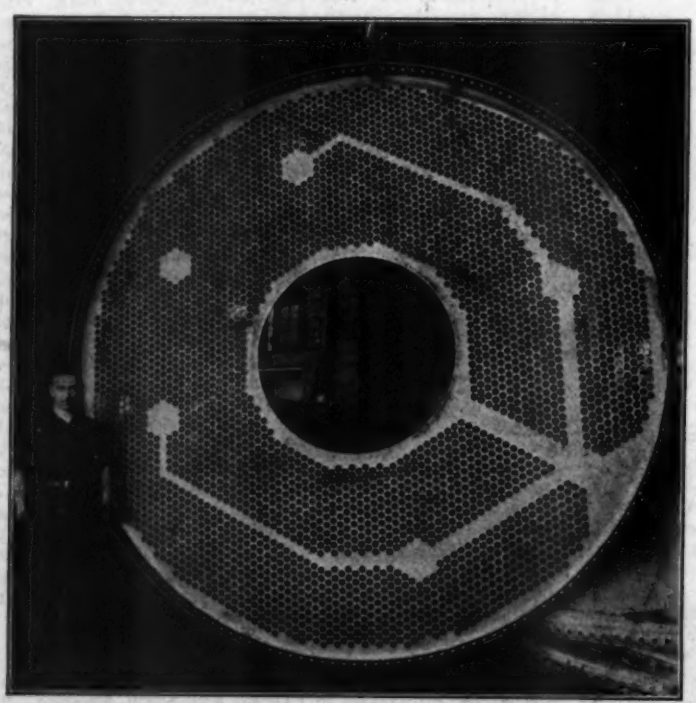
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
EASTERN AGENTS of Sulphite Pulp
Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.



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EXPORTS

Exportations of paper from the United States, in point of value, showed a decline in April as compared with the preceding month, but were larger than the shipments in the corresponding month last year, according to official statistics compiled and isued by the U. S. Department of Commerce. During April, paper to the value of $2,958,053 was exported from this country, contrasted with $3,441,992 in March this year, and $2,396,665 in April last year. Exports during the first four months of 1929, totaling in value $13,139,080, scored an appreciable gain over the exports in the similar period a year ago valued at $9,948,721.

Newsprint exports in April last amounted to 1,796,659 pounds, valued at $65,622, against 3,151,773 pounds of a value of $121,340 in the preceding month, and 1,236,073 pounds of a value of $44,132 in April, 1928. Book paper, not coated, exported in April totaled 3,331,605 pounds of a declared value of $232,167, compared with 2,598,553 pounds of a value of $189,207 in March this year, and 1,494,389 pounds of a value of $129,626 in April a year ago. Exports of wrapping paper increased from 2,531,956 pounds of a value of $175,630 in April, 1928, to 2,713,984 pounds of a value of $218,405 in the same month this year, while writing paper shipments were almost identical in value, totaling 2,602,063 pounds of a value of $259,582 in April last, against 1,912,253 pounds of a value of $259,064 in April a year ago. Tissue paper exports in April were valued at $74,106, contrasted with $88,781 in the same month of 1928.

Box board exports declined from a total value of $176,901 in April last year to $103,982 in the same month this year, and shipments of other paper board and straw board decreased in value from $150,306 in April, 1928, to $140,013 last April. Paper bag exports increased from $49,369 a year ago to $73,368 in April this year.

IMPORTS

Wood Pulp

The feature in the imported wood pulp market has been the large arrivals of pulp from abroad—more especially from Scandinavian sources—at the several Atlantic ports of the United States recently. Vessel after vessel has reached American shores carrying sizable tonnage of chemical wood pulp; some cargoes having run up to 25,000 and 30,000 bales. These receipts have, of course, constituted the usual spring shipments from Sweden, and have had scant influence on the market here other than to cause consumers to hold off buying for a time. The large arrivals were expected and have not upset trade sentiment or weakened the tone of prices in the least. In fact, market rates rule very firm on most classes of chemical pulp despite the large supplies that have become available.

The market at present is quiet. There is a certain amount of business materializing right along but it is of routine character chiefly, and most of the actual buying being engaged in involves pulps for far-forward shipment from abroad. Paper and board manufacturers in the United States are looking ahead and are contracting for 1930 supplies fairly freely, but purchases for current shipment from primary sources are limited both as to number and volume. In this connection, the restricted offering of pulp from abroad is an important market factor at present. Producers in Sweden, Norway, Finland and other European countries are reported practically sold out for this year, particularly as regards sulphite pulp, and are making few offers of supplies to be shipped during the remainder of 1929. This, obviously, contributes to the firm price tone in chemical pulp in the face of a quiet current market condition.

Imports of chemical wood pulp into the United States in April showed a sharp increase as compared with the preceding month, according to official figures compiled by the U. S. Department of Commerce, Total imports in April amounted to 110,497 long tons, valued at $6,442,298, against 75,959 tons of a declared value of $4,327,479 imported in the preceding month, and 73,788 tons of a value of $4,284,399 in the similar month a year ago. The gain in imports in April was due principally to a larger tonnage of unbleached sulphite being received, although the importations of kraft pulp also recorded a considerable increase over the preceding month and last year.

Chemical pulp imports into this country are running a little larger than last year, according to statistics covering the first four months of the current year. Total imports of all grades of chemical pulp in the first four months of 1929 amounted to 427,060 long tons, valued at $24,782,652, contrasted with 404,873 long tons of a declared value of $23,491,289 in the same period a year ago. The average monthly imports during the first four months of this year were 106,765 long tons, as compared with a monthly average of 101,218 tons in the corresponding time of 1928, which means that imports have been approximately 5,000 tons larger in each month of this year than last year. Imports of ground wood in April were 20,816 long tons, valued at $521,883, against 14,714 tons of a value of $391,551 in the preceding month, and for the first four months of this year totaled 71,298 tons, valued at $1,848,261, compared with 71,629 tons of a declared value of $1,768,243 in the corresponding time of 1928.

Foreign strong prime unbleached sulphite is quoted at 2.75 to 2.80 cents per pound ex dock New York or other American Atlantic ports in most instances, and sellers are firm in their demands regarding prices. Easy bleaching sulphite is on a quotable range of 2.75 to 3 cents on the dock, and prime bleached sulphite 3.70 to 4 cents for the more popular grades. Kraft pulp of prime Swedish variety is quoted at 2.45 to 2.50 cents ex dock though it is said these prices are being shaded in certain quarters. Imported groundwood is priced at $32 to $33 per net ton for prime dry pulp ex dock American Atlantic ports.

Current market quotations ex dock New York, and receipts at the port of New York during June, 1929, follow:

Bleached sulphite, No. 1	3.70– 4.25
Unbleached sulphite, strong No. 1	2.65– 2.80
Unbleached sulphite, No. 2	2.50– 2.65
Easy bleaching sulphite	2.80– 3.00
Mitscherlich unbleached, genuine	3.00– 3.25
Mitscherlich unbleached, ordinary	2.65– 2.80
Kraft, standard Swedish	2.40– 2.50
Ground wood, per ton (dry)	32.00–33.00

Bulkley, Dunton & Co., 15,775 bls. from Sandarne, 5,100 Hernosand, 3,100 Iggesund, 624 Rotterdam and 500 Gefle; Chemical National Bank, 180 bls. from Oslo and 127 Hamburg; Atterbury Bros., 150 bls. from Bremen and 1,000 Oslo; Brown Bros. & Co., 750 bls. from Norrsundet; International Acceptance Bank, 800 bls. from Oslo; Chatham & Phenix National Bank, 200 bls. from Oslo; A. P. W. Paper Co., 32,325 bls. from Sheet Harbor, N. S.; J. Andersen & Co., 1,000 bls. from Stugsund, 10,200 Hernosand, 1,050 Trieste, 150 Oslo and 3,492 Sarpsborg; Price & Pierce, Ltd., 900 bls. from Stugsund and 1,250 Gothenburg; Irving Trust Co., 900 bls. from Hernosand; Johaneson, Wales & Sparre, 300 bls. from Sundsvall, 400 Wifstavarf and 299 Gothenburg; M. Gottesman & Co., 3,625 bls. from Iggesund and 670 Rotterdam; Pagel, Horton & Co., 5,250 bls. from Gefle; Scandinavian Pulp Agency, 3,950 bls. from Skutskar and

Giving the Beaters a Lift

Conveyor or Gravity Feed Shredder

In the new mill of Taggart Bros. Co., Inc., Oswego, New York, one MITTS & MERRILL SHREDDER having a capacity of eight tons of dry stock per hour, shreds kraft pulp and discharges the stock by gravity into the chest where it is agitated until needed for the beaters.

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

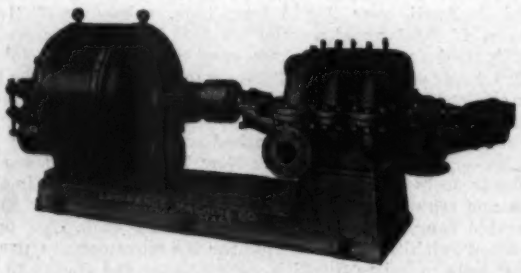
It gives the beater an economical lift.

MITTS & MERRILL

1013 Tilden Street, Saginaw, Mich.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 364 and 365 in the 1928 Paper and Pulp Mill Catalogue



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Sulphite Liquor Tanks, double-headed, of 6" Long Leaf Yellow Pine, built for the Champion Fiber Company, Canton, N. C. These tanks are 28' diameter with 20' staves.

Wood tanks for paper mills, stuff chests, acid storage tanks, blow pits, beater tubs, alum tanks, rubber-lined muriatic acid storage tanks made of Red Gulf Cypress.

Let us quote on your requirements.

WOOD TANKS

The Hauser-Stander Tank Co.

Cincinnati, Ohio

1,125 Wifstavarf; Stora Kopparberg Corp., 1,510 bls. from Skutskar; Castle & Overton, 3,905 bls. from Hamburg and 1,010 Rotterdam; Borregaard Co., 600 bls. from Oslo and 1,050 Sarpsborg; Kidder, Peabody & Co., 510 bls. from Gothenburg; E. M. Sergeant Co., 774 bls. from Gothenburg; Parsons & Whittemore, 600 bls. from Gothenburg; Perkins-Goodwin Co., 525 bls. from Wifstavarf; O. E. Kiaer, 300 bls. from Stockholm; Order, 306 bls. from Stockholm, 155 Bremen, 640 Hamburg and 10,950 Hernosand.

Paper Stock

Imports of rags for papermaking into the United States in April, 1929, amounted to 33,860,047 pounds, valued at $66,828, compared with 26,706,962 pounds of a declared value of $554,682 imported in the preceding month, and 33,736,452 pounds of a value of $614,731 in the corresponding month last year, according to official statistics issued by the U. S. Department of Commerce. Imports of waste bagging and waste paper in April were 11,589,590 pounds, contrasted with 10,765,682 pounds in March last, while imports of old rope and miscellaneous paper stock in April totaled 10,594,233 pounds, against 5,773,711 pounds in the preceding month. Papermaking rag imports in the first four months of the current year aggregated 127,022,147 pounds, showing a decline from the 133,975,549 pounds imported in the similar period a year ago.

Arrivals of papermaking materials in June were up to an average, according to receipts through the port of New York. Some sizable quantities of rags were imported, and normal tonnages of old rope and bagging. Imports of all kinds of paper stock excepting wood pulp at the port of New York during June, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—Brown Bros. & Co., 1,181 coils and 553 bls.; W. Schall & Co., 412 coils and 26 bls.; Furness, Withy & Co., 118 bls.; Anglo-South American Trust Co., 49 coils and 90 bls.; Irving Trust Co., 68 coils; United Fruit Co., 4 bls.; N. E. Berzen, 61 coils; French-American Banking Corp., 93 bls.; William Steck & Co., 86 coils and 51 bls.; Ellerman's Wilson Line, 156 coils; International Purchasing Co., 208 coils; Victor Galaup, Inc., 48 bls.; Sheet Piling Co., 30 bls.; Order, 45 bls. and 170 coils.

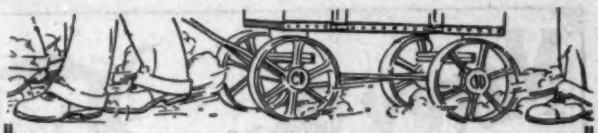
Old Bagging—Castle & Overton, 516 bls.; Hibernia Bank & Trust Co., 92 bls.; Katzenstein & Keene, 763 bls.; Brown Bros. & Co., 58 lbs.; Overton & Co., 863 bls.; Bank of the Manhattan Co., 222 bls.; Darmstadt, Scott & Courtney, 48 bls.; Dodwell & Co., 239 bls.; Daniel I. Murphy, Inc., 303 bls.; W. Schall & Co., 1,195 bls.; Banca Commerciale Italiana Trust Co., 252 bls.; Paul Berlowitz, 108 bls.; R. F. Downing & Co., 53 bls.; Goshens & Cunliffe, 82 bls.; Bank of New York & Trust Co., 63 bls.; First National Bank of Boston, 80 bls.; E. J. Keller Co., 163 bls.; J. W. Elwell, 104 bls.; A. W. Fenton, Inc., 10 bls.; Order, 146 bls.

Rags—Darmstadt, Scott & Courtney, 300 bls.; E. J. Keller Co., 1,055 bls.; Castle & Overton, 1,091 bls.; Daniel I. Murphy, Inc., 702 bls.; Daniel M. Hicks, Inc., 43 bls.; Ernst Mayer, 79 bls.; Atlas Waste Mfg. Co., 10 bls.; Victor Galaup, Inc., 1,738 bls.; J. Cohen & Sons, 366 bls.; Robert Bishop Mfg. Co., 183 bls.; Katzenstein & Keene, 971 bls.; G. Mathes Co., 114 bls.; Robert Blank, 98 bls.; S. Birkenstein & Sons, 825 bls.; George W. Millar & Co., 302 bls.; Paul Berlowitz, 249 bls.; Jebb Bros., 42 bls.; Alexander H. Searle, Inc., 5 bls.; O'Neill Bros. 25 bls.; David Galloway, Inc., 100 bls.; J. Reiss & Co., 26 bls.; Jaffe Products Co., 27 bls.; Salomon Bros. & Co., 53 bls.; Walker Goulard Plehn Co., 34 bls.; Goldman, Sachs & Co., 50 bls.; Baring Bros. & Co., 125 bls.; Fritz Stern, 7 bls.; Barrett Co., 156 bls.; P. Garvan, Inc., 102 bls.; Albany Fiber Co., 21 bls.; American Rag Trading Co., 13 bls.; Fidelity Trust Co., 174 bls.; Bank of the United States, 25 bls.; Public National Bank, 18 bls.; Banca Commerciale Italiana Trust Co., 26 bls.; Equitable Trust Co., 2,033 bls.; Bank of the Manhattan Co., 354 bls.; Bankers Trust Co., 29 bls.; Irving Trust Co., 93 bls.; National City Bank, 361 bls.; Interstate Trust Co., 150 bls.; Bank of America, 3 bls.; Manufacturers Trust Co., 55 bls.; Chemical Bank & Trust Co., 599 bls.; Chase National Bank, 483 bls.; Guaranty Trust Co., 1,308 bls.; National Bank of Commerce, 130 bls.; American Overocean Corp., 50 bls.; Goschens & Cunliffe, 111 bls.; Flintkote Co., 122 bls.; C. R. Spence & Co., 43 bls.; International Mercantile Marine Co., 12 bls.; W. Schall & Co., 334 bls.; Gallagher & Ascher, 129 bls.; 129 bls.; A. W. Fenton, Inc., 365 bls.; American Express Co., 113 bls.; Brown Bros. & Co., 230 bls.; Amtorg Trading Co., 160 bls.; Milton Snedeker Corp., 53 bls.; Overton & Co., 73 bls.; C. B. Richard & Co., 256 bls.; Order, 2,716 bls.

Miscellaneous Paper Stock—Daniel M. Hicks, Inc., 233 bls.; George W. Millar & Co., 36 bls.; Whaling Waste Products Co., 477 bls.; International By-Products Co., 174 bls.; Castle & Overton, 155 bls.; Darmstadt, Scott & Courtney, 107 bls.; Pequannock Valley Paper Co., 26 bls.; William Steck & Co., 37 bls.; S. Schapiro & Son, 6 bls.; E. J. Keller Co., 69 bls.; Chase National Bank, 192 bls.; Equitable Trust Co., 1,008 bls.; Anglo-South American Trust Co., 328 bls.; Bank of the Manhattan Co., 195 bls.; Union Bank & Trust Co., 65 bls.; National City Bank, 108 bls.; State Street Trust Co. of Boston, 112 bls.; Anchor Line, 82 bls.; Barrett Co., 33 bls.; A. W. Fenton, Inc., 41 bls.; Van Oppen & Co., 21 bls.; W. Schall & Co., 21 bls.; Brown Bros. & Co., 470 bls.; T. D. Downing & Co., 80 bls.; Order, 334 bls.

Paper

Importations of paper into the United States in April last, totaling in value $12,128,812, were slightly smaller in point of value than in the preceding month when imports aggregated a value of $12,624,738, but were a little above the im-



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Are they a problem in your mill? The solution is as easy as washing off the floors. The Silicate of Soda method is approved by the Bureau of Standards. Use Concrete Special Silicate of Soda for hardening your concrete floors and thus prevent troublesome dusting.

Stop dust with "Concrete Special". Send for Bulletin No. 34.

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Bale at left was dropped on edge from great height. The pulp gave, but strap and seals held.

Longview Fibre Uses Signode for Baling Kraft Pulp and Liner

The pulp is piled in units 20" high, 100 lb. pressure is applied and the bands are tightened and sealed.
This is but one of hundreds of different applications in the Paper Industry. If you are not already using Signode Tensional Steel Strapping it will pay you to investigate. Ask us to show you what we are doing for other Paper Mills.

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***The* Sealed Steel Strapping**

We also manufacture round wire tensional reinforcements, all forms of nailed-on strapping, wire tying machines, pail clasps, clutch nails, tag fasteners, etc. Write for general catalog.

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CYLINDER DECKLE AND CUTTER WEBBINGS

In All Weights and Widths Immediate Shipment from Stock

Careful—Intelligent—Quick Service

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THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

ports of a value of $12,118,411 in the corresponding month last year, according to official figures issued by the U. S. Department of Commerce. During the first four months of this year, paper imports totaled in value $49,95,361, contrasted with $50,600,871 in the similar period of 1928.

Paper imports during June were fairly large, judging from receipts through the port of New York. Arrivals of all kinds of paper at that port last month, these data being taken from manifests of vessels reaching New York during the month, were as follows:

Printing—Bank of Montreal, 12,364 rolls from Corner Brook; Journal of Commerce, 132 reels from Stockholm; Gallagher & Ascher, 22 cs. from Bremen; International Acceptance Bank, 18 bls. from Hamburg; Hudson Trading Co., 188 rolls from Wifstavarf and 249 rolls Sundsvall; J. Henschel & Co., 20 cs. from Hamburg; B. F. Drakenfeld & Co., 90 cs. from Liverpool; E. Dietzgen & Co., 120 cs. from Rotterdam and 357 cs. Hamburg; P. C. Zuhlke, 80 cs. from Antwerp and 4 cs. Bremen; Keuffel & Esser Co., 115 rolls from Hamburg; Perkins-Goodwin Co., 918 reels from Hamburg; F. Henjes, Jr., Inc., 140 reels from Hamburg; Stora Kopparberg Corp., 156 reels from Gothenburg; A. S. Zabriske, Inc., 65 reels from Bremen; C. A. Redden, 16 reels from London; Dingelstedt & Co., 18 cs. from Bremen; Walker Goulard Plehn Co., 105 reels from Hamburg; J. I. Bernitz, 64 bls. from Hamburg; American Express Co., 75 cs. from Havre; Armour & Co., 78 reels from Hamburg; Order, 2,024 reels and 123 cs. from Bremen, 470 reels Hamburg, and 68 cs. and 549 reels Kotka.

Wrapping—Yardley & Co., 3 cs. from London; American Express Co., 570 rolls and 39 bls. from Hamburg; Standard Products Corp., 7 cs. and 4 rolls from Antwerp; Birn & Wachenheim, 111 cs. from Antwerp; Atlantic Forwarding Co., 12 cs. from Hamburg; Wilkinson Bros. & Co., 67 cs. from Bremen and 350 bls. Gothenburg; Borregaard Co., 1,485 reels and 257 bls. from Gothenburg; Arkell Safety Bag Co., 217 reels from Gothenburg; Crepe Kraft Co., 75 reels from Gothenburg; H. Reeve Angel & Co., 103 rolls and 59 bls. from Gothenburg; C. K. MacAlpine & Co., 294 bls. from Gothenburg; Thomas Barrett & Son, 61 bls. from Gothenburg; Walker Goulard Plehn Co., 15 bls. from Hamburg; Blauvelt-Wiley Paper Mfg. Co., 286 reels from Gothenburg; Bernhard Ullman & Co., 14 reels and 19 bls. from Gothenburg; Order, 3 cs. from Antwerp and 20 bls. Rotterdam.

Cigarette—Ligget & Meyers Tobacco Co., 14 cs. from Bordeaux; M. Spiegel & Sons, 5 cs. from Bordeaux; Gluckmann & Strauch, 3 cs. from Bordeaux; Standard Products Corp., 767 cs. from Havre; P. J. Schweitzer, Inc., 108 cs. from Marseilles and 19 cs. Havre; British-American Tobacco Co., 197 cs. from Southampton; American Tobacco Co., 200 cs. from Bordeaux; P. Lorillard Co., 100 cs. from Marseilles; A. H. Bull, 20 cs. from Barcelona; Order, 2 cs. from Havre and 95 cs. Marseilles.

Writing—Guibont Freres & Co., 29 cs. from Havre; Leonhardt & Brush, 4 cs. from Havre; Eleto Co., 14 cs. from Havre; H. Reeve Angel & Co., 2 cs. from Southampton; Weiss Forwarding Co., 29 cs. from Havre; Walker Goulard Plehn Co., 8 bls. from Rotterdam.

Filter—E. Fougera & Co., 96 cs. from Southampton; H. Reeve Angel & Co., 21 cs. from Southampton and 10 cs. London; G. Luecders & Co., 10 bls. from Bordeaux; A. Giese & Son, 20 bls. from Southampton; C. Sleicher & Schull Co., 17 cs. from Hamburg.

Tissue—Baldwin Universal Co., 9 cs. from Liverpool; Meadows, Wye & Co., 2 cs. from Liverpool; G. W. Sheldon & Co., 3 cs. from London; Schenkers, Inc., 166 cs. from Hamburg; Milton Snedeker Corp., 13 cs. from Hamburg; Order, 3 cs. from Genoa.

Drawing—H. Reeve Angel & Co., 6 cs. from Southampton and 5 cs. London; Keuffel & Esser Co., 3 cs. from Southampton, 171 rolls and 75 cs. Hamburg, and 18 cs. Rotterdam; Favor, Ruhl & Co., 5 cs. from Havre and 6 cs. London.

Hanging—A. C. Dodman, Jr., Inc., 12 bls. from Southampton, 12 pkgs. Liverpool and 8 cs. London; C. A. Haynes & Co., 86 bls. from London and 3 cs. Liverpool; F. J. Emmerich & Co., 16 cs. from Hamburg and 5 bls. Liverpool; G. J. Hunken & Co., 3 bls. from Bremen; Schmidt-Pritchard Co., 4 bls. from Hamburg; F. L. Kraemer & Co., 2 cs. from Southampton; F. & R. Trading Co., 68 reels from Bremen; J. E. Bernard & Co., 2 cs. from Bremen; C. Grunner & Son, 2 bls. from Bremen; Guaranty Trust Co., 22 cs. from Hamburg; R. F. Downing & Co., 7 cs. from Southampton and 5 bls. London; F. A. Binder, 2 bls. from Bremen.

Photo—J. H. Schroeder Banking Corp., 18 cs. from Bremen; J. J. Gavin & Co., 2 cs. from Southampton; Globe Shipping Co., 625 cs. from Bremen; American Express Co., 25 cs. from Antwerp; Gevaert Co. of America, 233 cs. from Antwerp; P. C. Zuhlke, 59 cs. from Bremen; Order, 21 cs. from Hamburg.

Board—Hensel, Bruckman & Lorbacher, 80 bls. from Bremen; Lagerloef Trading Co., 42 bls. and 478 reels from Kotka; Adrian Vuyck, 422 reels from Rotterdam; Walker Goulard Plehn Co., 234 reels from Rotterdam; Almo Trading & Import Co., 19 cs. from Rotterdam; Chatham & Phenix National Bank, 48 bls. from Gothenburg; C. H. Powell & Co., 149 reels from Rotterdam; State Forwarding & Shipping Co., 3 cs. from Havre; Hass Bros., 176 rolls from Rotterdam; Order, 43 bls. from Hamburg.

Miscellaneous—Whiting-Patterson Co., 29 cs. from Southampton and 4 cs. Rotterdam; Japan Paper Co., 4 cs. from Southampton, 26 cs. Genoa, 6 cs. Antwerp, 7 cs. Gothenburg and 26 cs. Havre; G. W. Sheldon & Co., 8 cs. from Southampton and 7 cs. London; P. H. Petry & Co., 10 cs. from Bremen, 7 cs. Hamburg, 3 bls. Havre and 7 cs. Rotterdam; S. Gilbert, 111 cs. from Bremen; Hensel, Bruckman & Lorbacher, 11 cs. from Bremen, 17 cs. Havre, 6 cs. Rotterdam, 7 cs. Southampton and 9 cs. Hamburg; Blackman & Blackman, 21 cs. from Bordeaux; C. H. Boulin, 35 cs. from Havre; Keller-Dorian Paper Co., 39 cs. from Havre; F. Murray Hill, Inc., 18 cs. from Bremen; Hurley-Johnson Corp., 31 bls. from Liverpool; Borden & Riley Paper Co., 19 cs. from Antwerp; Central Union Trust Co., 57 cs. from Hamburg; Kennedy & Co., 5 cs. from Rotterdam; National City Bank, 77 cs. from Hamburg; Tamm & Co., 4 cs. from Trieste and 8 cs. Bremen; Coenca-Morrison Co., 2 cs. from Hamburg and 16 cs. Havre; J. E. Bernard & Co., 25 cs. from Bremen and 27 cs. Gothenburg; F. L. Kraemer & Co., 4 cs. from Bremen; Owen Publishing Co., 15 cs. from Bremen; Quality Art Novelty Co., 22 cs. from Hamburg; Steffen, Jones & Co., 3 cs. from Osaka;

For Beater Dyeing

WHERE fastness to light is of prime importance, the following National Dyes are particularly recommended:

National Brilliant Paper Yellow C
National Erie Fast Yellow WBP
National Solantine Yellow FFP Conc.
National Croceine Scarlet FP Conc.
National Niagara Sky Blue 6BP (with copper sulfate)
National Niagara Blue GP Conc. (with copper sulfate)

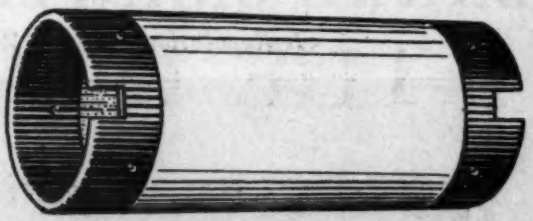
You will find it advantageous to consult us about your coloring problems.

National Aniline & Chemical Co., Inc.
40 Rector Street, New York, N. Y.

BOSTON PROVIDENCE CHICAGO CHARLOTTE TORONTO PHILADELPHIA SAN FRANCISCO

NATIONAL DYES

ELIXMAN PAPER CORE CO., INC.
Corinth, N. Y. **U. S. A.**



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ANIMAL SIZING GLUE STOCK

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FINE WRITING PAPER SIZING

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You Can't Spell "PERFECTION" Without a "P"

Neither Can You Obtain It Without the Right Type of Roll---Ours Is the Right Type

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The Rubber Roll Makers

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WET FELTS for TISSUE MACHINES

FREE RUNNING—LONG LIFE

THE WATERBURY FELT CO.

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BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

Pacific National Bank, 10 cs. from Hamburg; H. Reeve Angel & Co., 6 cs. from Yokohama; D. F. Young, 3 cs. from Liverpool; D. C. Andrews & Co., 10 cs. from Rotterdam, 11 cs. Liverpool and 2 cs. Hamburg; Tiffany & Co., 10 cs. from Havre; F. C. Strype, 2 cs. from Genoa; J. Beckhardt & Co., 9 cs. from Rotterdam; C. A. Redden, 4 cs. from Havre; Rohner, Gehrig & Co., 5 cs. from Hamburg; E. Henningson, 3 cs. from Bremen; Defiance Sales Corp., 16 cs. from Rotterdam; Heemsoth & Basse, 88 bls. from Rotterdam; Steiner Paper Corp., 37 cs. from Rotterdam; Louis DeJonge Co., 23 cs. from Rotterdam; Charles W. Williams & Co., 11 cs. from Antwerp; International Clearing House, 10 cs. from Havre; Hudson Forwarding & Shipping Co., 5 cs. from Havre and 12 cs. Bremen; International Forwarding Co., 9 cs. form Hamburg, 16 cs. Rotterdam, 28 cs. Antwerp and 3 cs. Yokohama; Globe Shipping Co., 3 cs. from Southampton, 67 cs. Rotterdam and 7 cs. Bremen; American Express Co., 156 cs. from Havre; Universal Carloading & Distributing Co., 13 cs. from Bremen and 4 cs. London; Independent Forwarding Co., 15 cs. from Havre and 2 cs. Southampton.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 38615—Bond paper. Shanghai, China. Agency desired.

No. 38553—Paper towels. Montreal, Canada. Agency and purchase desired.

No. 38614—Wall boards, insulating. Berlin, Germany. Agency desired.

No. 38597—Wall and insulating boards. Montreal, Canada. Agency desired.

No. 38626—Waterproof paper. San Juan, Porto Rico. Purchase desired.

No. 38616—Wrapping paper for confectionery trade. Toronto, Canada. Purchase and agency desired.

No. 38661—Rosin. Hamburg, Germany. Purchase desired.

No. 38810—Toweling paper, toilet paper, paper napkins and paper doilies. Newcastle, England. Purchase desired.

No. 38804—Paper towels. Montreal, Canada. Agency and purchase desired.

No. 38784—Wall and insulating board. Montreal, Canada. Agency desired.

No. 38765—Writing and printing paper. Havana, Cuba. Agency desired.

No. 39007—Pulp and paper making machinery. Sudbury, Canada. Agency desired.

No. 39081—Overissues and old newspapers. Batavia, Java. Purchase desired.

Watermarked Papeteries Take Higher Duty

Two important decisions have been rendered by the United States Customs Court in cases involving the importation of papeteries. One is that a watermark with a geometrical design added to the attractiveness of the paper and therefore constituted a decoration which would justify the imposition of an additional duty of 10 per cent on both the paper and the envelopes so watermarked. Another adds a 10 per cent duty to tinted envelopes, although the tinting provision does not under the existing tariff law require an additional duty upon the paper accompanying the envelopes. Both of these decisions will have a farreaching effect upon the importations of foreign boxed stationery, and were rendered as one of the results of the efforts of the Import Committee of the American Paper Industry to insist upon a strict enforcement of the law providing for a special duty on decorated stationery.

Another important case recently decided involves imports of kraft wrapping paper on the Pacific coast for wrapping leather. The paper, which was nineteen points in thickness, was claimed by the importers to be dutiable at 10 per cent as board, but the domestic industry contended that despite its thickness it was paper, and had none of the essential characteristics of paper board.

Combustion Engineering Corporation, New York City, has divided the southern territory formerly known as the Atlanta district into three sections, served by offices at Charlotte, N. C., T. W. Battle, Manager; Atlanta, Ga., I. S. Forde, manager, and New Orleans, La., E. C. Walthall, manager.

Did It Ever Occur to You

That several scores of mills have brought about important economies thru the installation of new Dayton High Speed Beaters, or thru the reconstruction of old holland engines into Daytons?

Did it ever occur to you that in this day of heavy production and gradually narrowing margins of profit that

LOWER CONVERSION COSTS

simply have to be obtained and are being obtained with Dayton High Speed Beaters—in practically all kinds of mills?

Write us for list of Dayton users and data on various installations

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It will pay you to get in touch with some of the Mills that use—

DAYTON HIGH-SPEED BEATERS

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
CHAMPION
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NON-FOAMING

MAXIMUM
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NO ENTRAINMENT

SODA and
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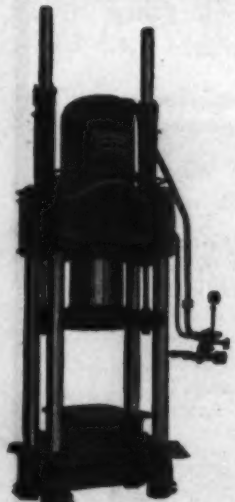
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1928 Paper and Pulp Mill Catalogue

SOUTHWARK

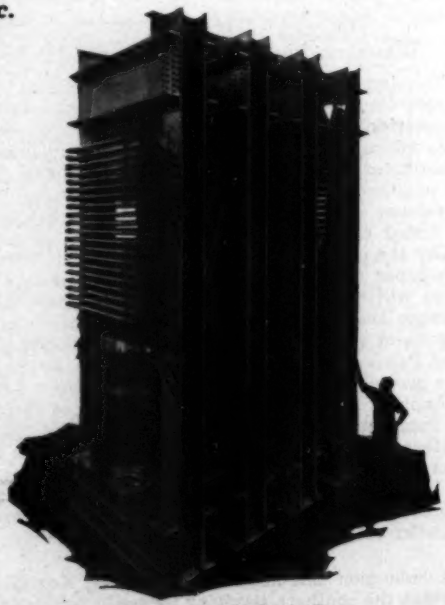
Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.



600 Ton Pulp Press

PULP PRESSES
BALING PRESSES
WALL BOARD PRESSES
PULP TRUCKS
HYDRAULIC PUMPS
ACCUMULATORS
VALVES, FITTINGS, ETC.

Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



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20 Opening Wall Board Press

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Origin of the Barking Drum

Dr. Willi Schacht, of Weimer, Germany, who is recognized in Europe as one of the foremost authorities on the manufacture of straw soda pulp, is the author of a note in Zellstoff und Papier for June, 1929, on the origin of the barking machine. He calls attention to the fact that the Thorne barker was not the first machine of its kind and Wertheim, of Cassel, was not the original inventor of the tumbling barker. This type of barker was first used at the mill of the Böhnsdalen Pulp and Paper Company at Böhn near Eidsvold, Norway, and its invention is attributed by Doctor Schacht to Mr. Bache-Wiig, who was then managing director of the mill. For corroboration of this, he appeals to Dr. Viggo Drewsen, of New York, who was at one time sulphite superintendent in the Böhnsdalen mill.

In a talk with a representative of THE PAPER INDUSTRY, Doctor Drewsen, who is chief consulting chemist of the West Virginia Pulp and Paper Company at the main laboratory in New York, he said that Schacht had stated the matter correctly but had failed to give credit to the person who actually was the first to suggest the new method of barking wood by tumbling the sticks together in contact with water. Doctor Drewsen said that it was Joergen Höibraaten, lumber buyer for the Böhnsdalen mill, who had conceived the idea of the tumbling barker. He had observed that in stormy weather when the river was in a turbulent state by heavy winds, the logs were churned violently and peeled of their bark. Mr. Höibraaten made the suggestion to Mr. Bache-Wiig that he have an apparatus constructed in which the logs could be tumbled about in contact with water in a manner to resemble the natural process and the outcome of this suggestion was the construction of a barking machine, much resembling the various machines now in use.

Credit for the construction of the first barking machine is given by Doctor Drewsen to Einar Morterud, widely known in papermaking circles as the inventor of the Morterud digester and other pulp mill machinery, for it was to Mr. Morterud that Mr. Bache-Wiig turned when the idea of a barking machine was considered. Doctor Schacht says that he saw the machine as made by Morterud in operation at the Böhnsdalen mill in 1892, which was perhaps two or three years subsequent to the time it was built.

Many changes and improvements have been effected in the barking machine or drum since it was first constructed, but the principle remains the same. Like many similar worthy inventions in the pulp and paper industry, the idea originated, not with a mill superintendent, but with a layman who had observed how logs with the bark on peeled rapidly in storm-tossed water.

Import Committee Contests Paper Entries

An effort to secure the admission of printed letterheads and envelopes as printed matter is being vigorously combatted by the Import Committee of the American Paper Industry, the belief being that such letterheads should be dutiable at 3 cents per lb. and 25 per cent, instead of 25 per cent at claimed by the importers.

An importer is also endeavoring to import India Bible paper, dutiable under the tariff act at 4 cents per lb. and 15 per cent, either as standard newsprint duty-free, or as book paper at ¼ cent per lb. and 10 per cent ad valorem.

Other cases which the Import Committee is contesting involve the following:

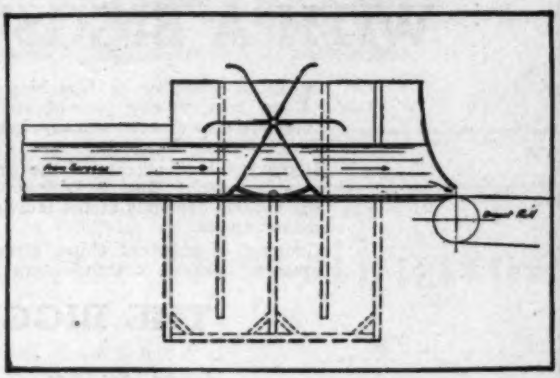
Twenty-two importations of boxed stationery classified by appraisers as subject to 10 per cent extra duty for special finish, while claimed by importers to be plain writing paper.

Envelopes for lithographed greeting cards claimed by importers to be duty-free as container for lithographic material, but held by customs officials to be dutiable as envelopes.

The Virginia Cellulose Company, Inc., has been taken over by the Hercules Powder Company, Wilmington, Dela., and will hereafter be known as the Virginia Cellulose Department. The contracts and obligations of The Virginia Cellulose Company, Inc., and the new division will be under the direction of the same personnel as heretofore.

THE TRIMBEY HEAD—BOX ELIMINATOR

Patents applied for U. S. and Canada



A simple and inexpensive device which does what paper machine builders have tried to do with cumbersome, slime gathering baffles and passages; gives an even sheet across the wire.

No "Eddies" or cross currents can possibly travel from screens to slice; All are effectively smoothed out by slowly moving blades which extend entirely across the pond.

Eliminator rotated by the current of the moving stock; speed only 2-3 r.p.m.

Flexible rubber tips prevent all "wave" as blades leave liquid.

Absolutely no variation in head behind slice.

Slime gathering surface reduced to minimum.

No dead corners for lumps and slugs to accumulate.

Can be installed in your present head box in a few hours.

ASK US

TRIMBEY MACHINE WORKS,
Glens Falls, N. Y.

Makers of
CONSISTENCY REGULATORS
PULP SCREENS
METERING SYSTEMS

"YOU CAN DO IT BETTER WITH A BIGGS"

YOUR Cooking or bleaching problems, no matter how complicated can be successfully and economically handled with Biggs Rotary Digesters.

Biggs has kept abreast of the times in designing special Rotary Digesters to meet the various demands of the individual paper manufacturer.

Cooking of chestnut chips, straw, various grasses, bagasse, cotton linters and wood fibre by different processes can be accomplished in the shortest space of time and with the lowest possible maintenance and power requirements in a properly designed Biggs Digester.

Special agitators, steam distributing and washing system and sturdy constructed drives are the result of Biggs contact with the Paper Industry since 1887.

Hundreds of mill executives all over the country have used Biggs Equipment for years.

Whether your requirements demand Riveted or Welded construction we would appreciate an opportunity of serving you.

Perhaps you would like a copy of the Biggs Rotary Book? It is yours for the asking.

THE BIGGS BOILER WORKS CO.
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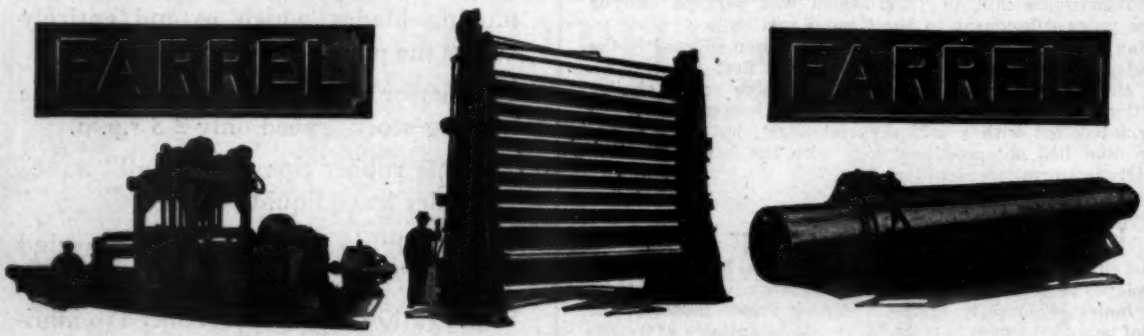
ROTARY BLEACHING BOILERS
"You Can Do It Better With a Biggs"



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FARREL CALENDERS are equipped with Electric, Hydraulic or Ratchet Lift, all operated from the floor.

FARREL ROLLS are made as large as 298" on the face. Known all over the world.

FARREL INDICATING ROLL CALIPER is extremely accurate. The majority of the parts are made of aluminum alloy, making a light weight instrument. Rolls may be calipered to the end of the face without reversing the caliper.

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